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IN THIS ISSUE

usal Equilibration for the eneral Practitioner 12

ng Dental Pulps With Oxy-tracycline: A Preliminary eport 19

ediate Temporary Partial enture for Esthetic Replace-ent of Anterior Teeth 22

ic Implant in Correction of veolar Depression 24

nique for a Temporary rylic Crown 27

cal and Laboratory ggestions 30

Editor's Page 32

icine and the Biologic nces 33

ra-Angles 42

(A Complete Table of Contents Appears on page 11)

Cover illustration—Goodman article, page 27

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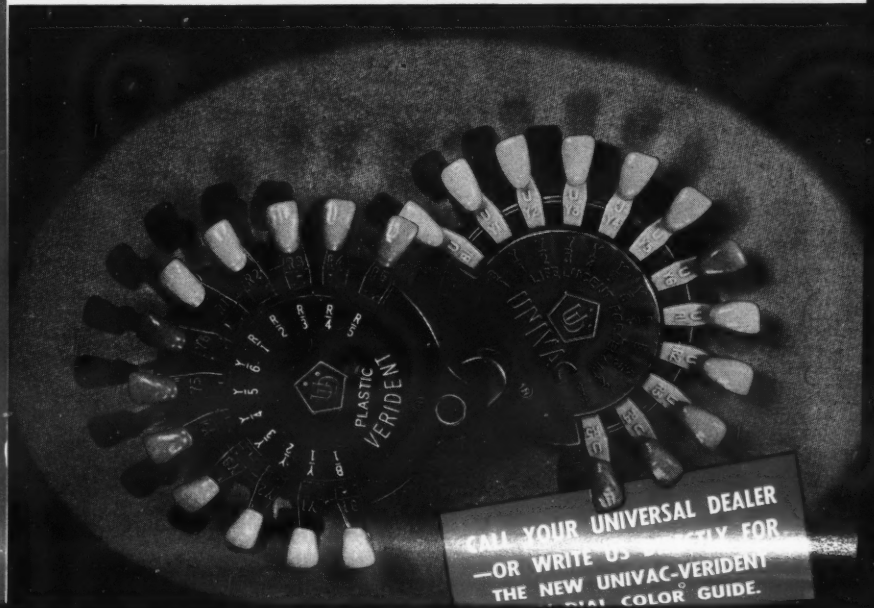

Vol. 65, No. 1

Dental Digest

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JANUARY 1959

Occlusal Equilibration for the General Practitioner
Ellis G. Bovik, D.D.S. 12

Acute Hypotension From Fear (An Abstract)
E. P. Sharpey-Schafer, F.R.C.P., C. J. Hayter, B.Sc., M.R.C.P., and E. D. Barlow, M.B., D.P.M. 18

Saving Dental Pulps With Oxytetracycline: A Preliminary Report
Harry Maeth, D.D.S. 19

The Trouble With the Staphylococcus (An Abstract) 21

Fires and Explosions from Anesthetic Agents (An Abstract)
George J. Thomas, M.D. 21

Immediate Temporary Partial Denture for Esthetic Replacement of Anterior Teeth
Jay W. Friedman, D.D.S. 22

Plastic Implant in Correction of Alveolar Depression
Virgilio Moojen de Oliveira, C.D., M.D. 24

Technique for a Temporary Acrylic Crown
Lawrence Goodman, D.D.S. 27

A Self-Cleaning Dental Mirror (An Abstract)
Walter M. Ormes, Jr., Major (DC) USA 29

Clinical and Laboratory Suggestions 30
1. Protection of Alginate. 2. Saliva Control. 3. Removal of Wax Spots. 4. Increasing Retention of a Gingival Inlay. 5. Stability of Lower Occlusion Rims. 6. A Matrix Holder.

The Editor's Page 32

Medicine and the Biologic Sciences 33

Oral Diagnosis of Systemic Disease (An Abstract)
Eugene S. Hopp, M.D. 41

Contra-Angles 42

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OCCLUSAL EQUILIBRATION

for the General Practitioner

ELLIS G. BOVIK, D.D.S., Monterey, California

DIGEST

The author of this article is convinced that all cases of complete, partial, and edentulous mouths may be successfully balanced, or equilibrated by the utilization of an arc of a circle, or segment of a sphere with a radius of 4, 5, or 6 inches. A technique of occlusal equilibration based on the use of the sphere has been developed during the past thirty years of his practice. The technique has been improved upon from time to time by the aid of new materials such as the impression materials, casting procedures, and quick curing resins. An important step in the technique is the use of the occlusal equilibrator which has been devised by the author to aid in correction of occlusion.

The technique described is used in all phases of dentistry including (1) periodontal treatment, (2) complete rehabilitation of natural teeth, (3) complete upper and lower dentures, (4) fixed bridges, (5) complete upper and partial lower dentures, (6) complete lower and partial upper dentures. The step-by-step procedure applied in a case that required complete gingivectomy and rehabilitation is described.

Instruments Required

The technique is extremely simple and may be adapted without elaborate equipment of any kind. The indispensable implement is a segment of a sphere with a 4, 5, or 6-inch radius. The rest of the armamentarium required, including a plane line articulator, is usually available in every dental office.

Glass Sphere Used—From a glass sphere with a six-inch radius cut a segment roughly the shape of an upper baseplate (Fig. 1). This may be made of glass, plastic, or metal, and should be about a quarter of an inch in thickness, with the concave surface representing the inner surface of the sphere and the convex surface representing the outer surface of the sphere. Those used in this exposition are made of glass and are procurable from optical supply houses or lens-grinding firms, or may be made by the dentist from plastic or metal.

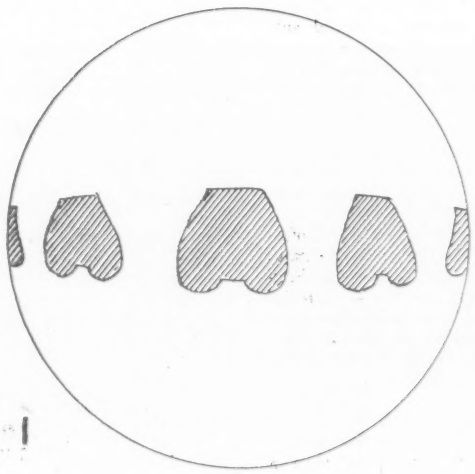
Metal Discs—From the accurate glass or plastic segments small metal or hard plastic discs may be fabricated for use in the actual technique of equilibration.

Technique

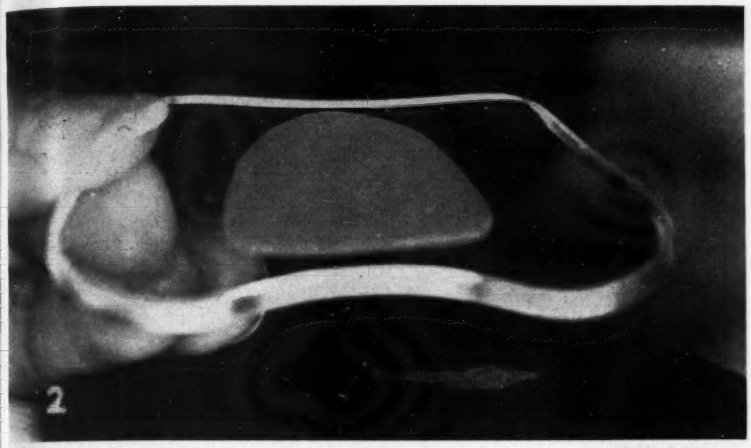
The technique described is exactly the same as that used in the variety of cases mentioned. The following steps were taken:

1. Complete mouth x-rays are taken.
2. The teeth are thoroughly scaled and polished.
3. Accurate study models are made in artificial stone.
4. The study models are duplicated and master models filed in artificial stone.

Segment Chosen—Select a segment of one of the three spheres mentioned. This selection is made by applying soft utility wax to the remaining lower teeth. By pressing the segment into the soft wax, select the segment which requires the minimum amount of grinding before it falls into the curve.



1. ***A segment, roughly the shape of an upper baseplate, is cut from the sphere.***



2. *A small wax disc is made on the concave side of the segment selected.*

It is also helpful to observe the Curve of Spee in making the selection of the segment to be used.

Wax Pattern Made—Make a small wax disc on the concave side of the segment selected (Fig. 2). This wax pattern should be roughly the shape of an upper baseplate and about the thickness of a piece of pink baseplate wax. Remove the pattern from the concave side of the segment and cast in brass, silver, or chrome alloy. The finished casting will then have a smooth surface of the *convexity* of the segment used. It is also possible to make these discs in hard plastic directly from the glass plate.

Procedural Steps

1. Make a mix of quick curing acrylic, such as that used in making trays, and baseplates. On the upper working model take a mass of this material and press firmly into the vault of the palate up to the gingival margins of the teeth. A lubricant must be used on the cast to prevent the plastic from sticking.

2. It is well to occlude the models at this time so that the lower teeth do not touch or interfere with the plastic mass.

3. While the plastic is still soft, place the metal disc into the mass with the convex surface of the disc facing occlusally. The disc is so placed that it follows as closely as possible the Curve of Spee of the upper posterior teeth.

4. When the Curve of Spee is acute it may be necessary to use a segment with a 4 or 5-inch radius. The segment with a 6-inch radius has been used in about 90 per cent of an extensive range of cases.

5. The metal disc is so placed that it is nearly parallel laterally (Fig. 3).

6. On the lower model a platform of quick curing acrylic resin is made to fit accurately around the gingival margins of the teeth (lingually) and also to cover any edentulous areas present.

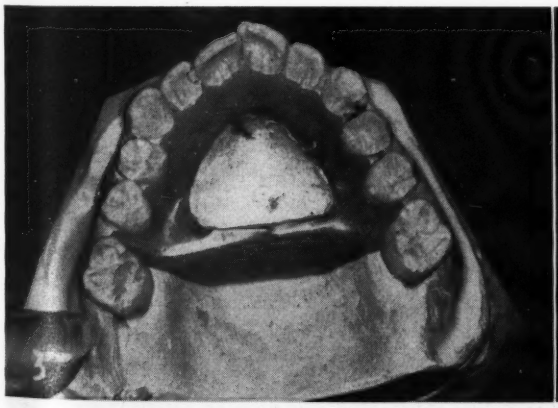
7. In the center place a small metal nut which has a metal screw passing through it. The tip of the screw will engage the metal disc of the upper when placed in the patient's mouth (Fig. 4).

Use of Occlusal Equilibrators

Because of the way in which they are used, the acrylic pieces described may be called "occlusal equilibrators." Figures 5 and 6 are diagrammatic sketches of the occlusal equilibrators.

Screw Adjusted — The occlusal equilibrators are placed in the patient's mouth with the screw adjusted high enough so that none of the teeth touch in *any* position of the mandible. Thus the movements of the mandible are entirely controlled by the muscles of mastication guiding the temporomandibular joint and are not influenced by the cusps or inclined planes of the teeth.

Contacts Corrected by Spot Grind-



3. *The metal disc is placed in the mouth so that it follows as closely as possible the Curve of Spee.*

4. *The tip of the screw will engage the metal disc of the upper when placed in the patient's mouth.*

ing—The screw is gradually lowered until the *first* contacts are made between the teeth of the opposing jaws. These contacts are recorded with articulating paper, and the initial spots are ground with a stone, making the cuts with the *curve in mind*. The screw is again lowered about one-half turn, carbon paper again used, and the grinding continued.

Pattern Provided by Equilibrators—The occlusal equilibrators serve as an accurate grinding guide, or "gig." The use of the occlusal equilibrators provides a definite pattern, so that the finished case, after grinding, will follow on the lower jaw a *concave* plane anteroposteriorly as well as laterally, whereas the upper teeth will follow a *convex* plane.

Complete Equilibration in Periodontal Cases—It is rarely possible to equilibrate *completely* any mouth without either making restorations, or increasing the vertical dimension. In a periodontal case, however, which may or may not require surgical treatment, it is possible by this method to produce an occlusion devoid of cuspal interference.

Method to Increase Vertical Dimension With Equilibrator

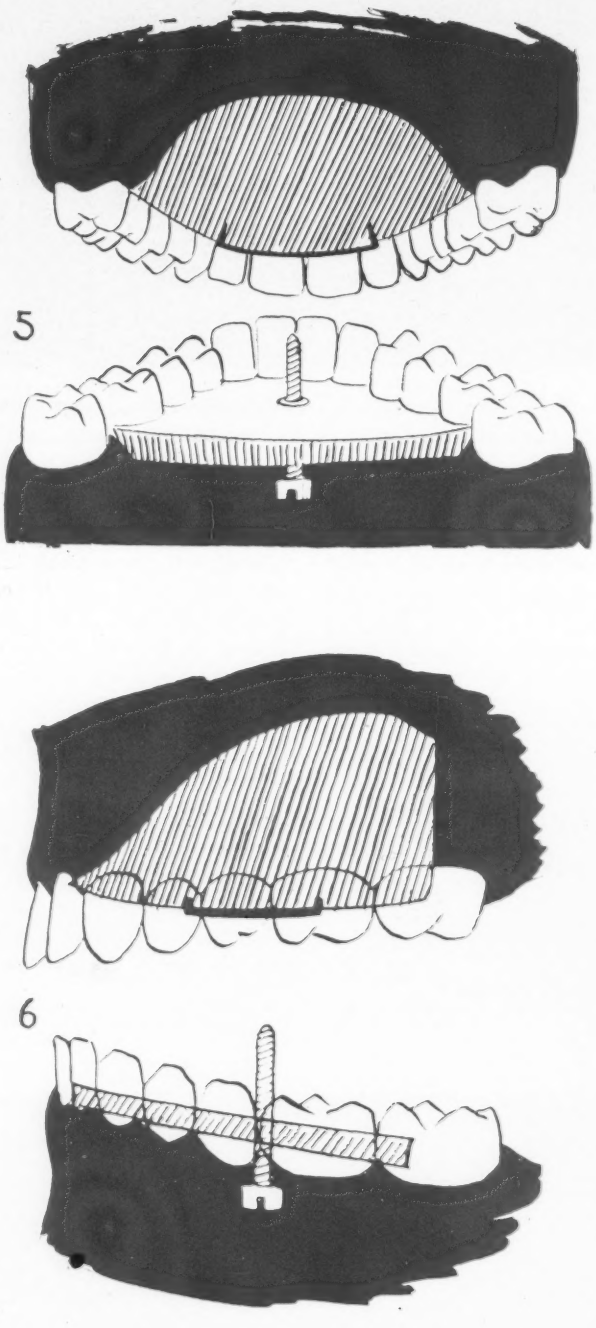
The occlusal equilibrator is useful as an aid in increasing the vertical dimension when this measure is necessary in rehabilitation procedures. The following steps are taken:

1. When the grinding has been accomplished with the occlusal equilibrators and it is desired to increase the vertical dimension, all that is necessary is to raise the screw the desired amount of opening and take a registration in either wax or plaster.

2. After the registration has been made, remove the occlusal equibrilators and again take an accurate impression of both jaws.

3. These casts are mounted on a plane line articulator, using the registration obtained with the increased vertical dimension. On the casts temporary appliances of acrylic or metal may be made.

4. In cases in which the vertical dimension is increased the patient routinely wears a temporary appliance for a period of time ranging from a few weeks to more than six months. In Figures 7 to 11 are shown views of the case before treatment was undertaken and later when the occlusal equilibrator had been placed in position in the mouth.



5 and **6.** *Diagrammatic sketches of the occlusal equilibrators.*

7. *Anterior view of the case to be treated before treatment was begun. There were deep pockets throughout the mouth and a complete gingivectomy was performed.*

Presentation of a Practical Case

Figures 7 to 26 show the step-by-step procedure and technique.

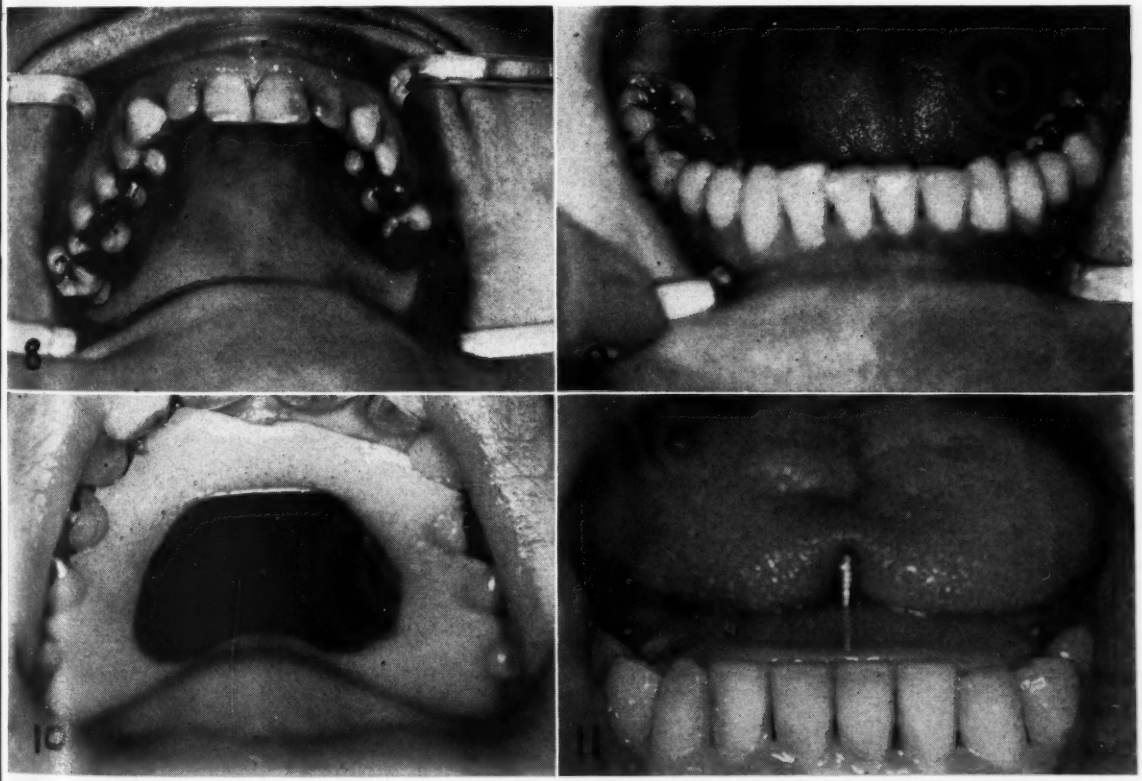
After equilibration this case required a complete gingivectomy before the bite opener was made. The "bite opener" was constructed on the lower teeth to increase the vertical dimension the required amount. The patient wore this appliance for a period of two months as a test of the comfort of the procedure. It will be noted that the plane of the bite opener follows the curve described (Figs. 12 and 13).

Bite Opener Made Double — In making the bite opener one casting is made for half the space, another casting is made over it and tacked on with solder. The purpose of this is to ensure that in the actual reconstruction the increased vertical dimension is equally divided between the upper and lower teeth.

Full Mouth Reconstruction—After the two-month trial period the mouth was reconstructed utilizing baked porcelain and high fusing gold:

1. The upper left bicuspids and molar were prepared for complete veneer crowns. The impressions in this case were all made with reversible hydrocolloid.

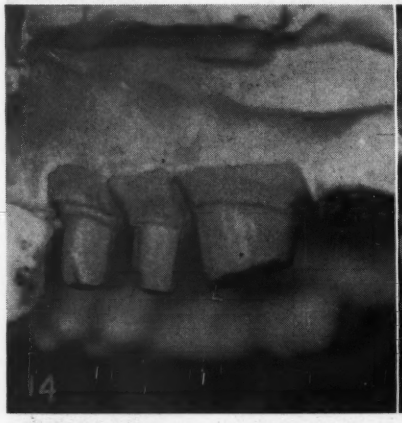
2. A laboratory model showing the



8. *Shows the upper occlusal view of the patient's mouth (preoperative).*
9. *Shows the lower occlusal view (preoperative).*
10. *Upper occlusal equilibrator in position.*
11. *Lower occlusal equilibrator in position.*

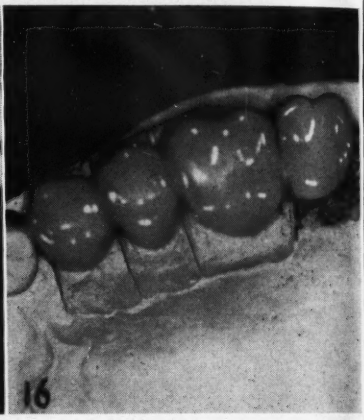
12. *The bite opener in the mouth. Observe the curve.*

13. *The bite opener in position with the teeth closed.*

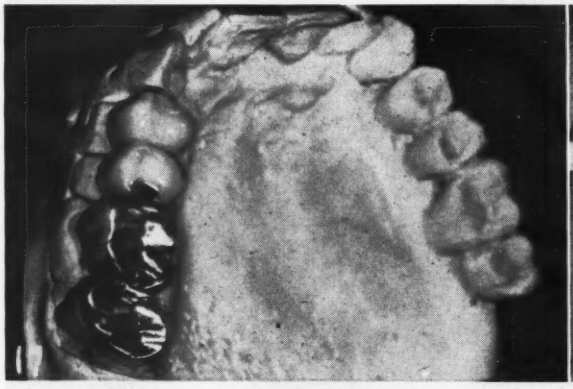


14. *A laboratory model showing the preparation on the bicuspids and first molar.*

15. *Shows the restorations which are all attached and carry a cantilever pontic for the second molar.*



16. *An occlusal view of the upper left side on the laboratory model.*



17. *Occlusal view of the upper right side.*

18. *The completed restorations of the posterior teeth.*

preparation on the bicuspids and first molar is shown in Figure 14.

3. Figure 15 shows the restorations which are all attached and carry a cantilever pontic for the second molar. An occlusal view of the upper left side on the laboratory model is shown in Figure 16.

Upper Right Side Completed—(1) Permajacket® crowns were made for the two bicuspids which were attached. The second bicuspid carried a dovetail in the distal for the reception of the male counter part in the gold inlay of the first molar.

(2) The inlay in the first molar also carried a dovetail lock in the distal for the reception of the male

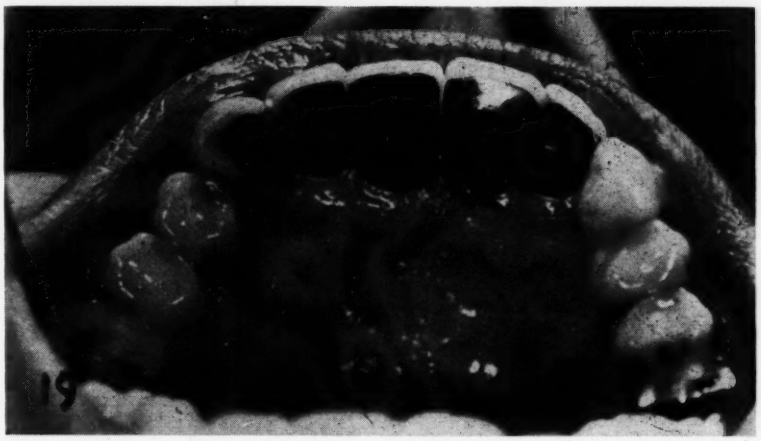
counterpart of the second molar, thus the entire quadrant was splinted together.

(3) The upper right side is seen in occlusal view in Figure 17. Completed restorations of the posterior teeth are shown in Figure 18.

Upper Anterior Teeth Prepared—After the completion of the upper posterior teeth, the upper anterior teeth, with the exception of the right cuspid, were prepared for jacket crowns (Fig. 19).

Preparation of Lower Right Quadrant—After completion of the restorations in the upper jaw, the lower right quadrant was prepared (Figs. 20 and 21). The two bicuspids are attached and the two molars are also attached and locked into the distal of the second bicuspid so that the entire quadrant is splinted (Fig. 22).

Lower Left Side Completed—An occlusal view of the completed lower

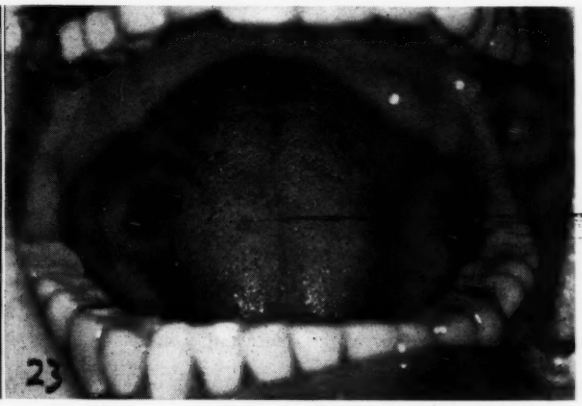


19. ***The lingual aspect is shown of the finished Permajacket® crowns on the upper five anterior teeth.***

20. ***The laboratory working model of the lower right side.***

21. ***The occlusal view of the lower right side. Note that the two bicuspids are attached and the two molars are also attached and locked into the distal of the second bicuspid so that the entire quadrant is splinted.***

22. ***The completed restorations of the lower right side. Note that the bite opener has been cut into two parts and the left side is still in use.***



23. ***An occlusal view of the completed lower jaw. Note the concave curve of the finished restorations laterally as well as anteroposteriorly.***

24. *Shows the right lateral view of the finished case.*

25. *Shows the left lateral view of the finished case.*

jaw is shown in Figure 23. Note the concave curve of the finished restorations laterally as well as anteroposteriorly.

Comment

This simple technique which the author has used in innumerable cases is so adaptable and so versatile that it can be used in all phases of dentistry and merits investigation by other operators.

All of these cases are built on a plane line articulator because this author has not been convinced that there is any mechanical instrument made which can duplicate the movements of the human mandible. If the technique is followed as outlined, utilizing the occlusal equilibrators, it is *never* necessary to make corrections in the mouth as far as occlusion is concerned.

26. *Shows the completed case from the anterior aspect. By comparing Figure 7 with Figure 26 it is apparent what has been accomplished in this case.*

Summary

By using the occlusal equilibrators described it is possible to give the patient a properly balanced, thoroughly comfortable, and acceptable esthetic dentition, whether it be complete dentures, fixed bridges, partial dentures, rehabilitation of natural teeth, or merely equilibrating periodontally involved mouths.

307 *Professional Building*

Acute Hypotension From Fear

E. P. SHARPEY-SCHAFER, F.R.C.P., C. J. HAYTER, B.Sc., M.R.C.P., and E. D. BARLOW, M.B., D.P.M.

Continuous circulatory measurements were made before and during N_2O anesthesia for tooth extraction and the administration of apomorphine for chronic alcoholism. Five out of 21 dental patients developed acute hypotension with vasodilation of forearm vessels, four of these before the anesthetic was given. Fear appeared to be the main cause, with a fall in arterial oxygen saturation as a possible minor factor. Apomorphine-induced nausea caused a fall in the effective filling pressure of the heart which preceded hypotension and syncope.

It is suggested that emotional stimulation of the heart beat and a fall in cardiac filling pressure cause virtual emptying of a ventricular chamber during systole which fires the afferent mechanism of the faint reflex. There is strong evidence that subjects with heart failure, whose ventricles are not easily emptied, do not faint.

From *Brtish Medical Journal* No. **5101**:880 (Oct. 11) 1958.

Saving of Dental Pulps with OXYTETRACYCLINE: *A Preliminary Report*

HARRY MAETH, D.D.S., Mosinee, Wisconsin

DIGEST

Evidence of the dental root-end lesion of diffuse rarefying osteitis has usually been considered by the practitioner as tantamount to pulp extirpation or tooth extraction.

Such lesions are part of the clinical picture of an inflamed, infected pulp. This situation, when the pulp is viable, has been found to be reversible under treatment of oxytetracycline, applied directly to the involved tooth cavity. This article describes the step-by-step treatment applied and the results obtained.

Factors in Successful Treatment

Direct application of oxytetracycline (Terramycin®) into the deep seated cavity has apparently brought about a physiologic phenomenon of the dental pulp, accompanied by bone repair.

Teeth affected in this manner have been successfully treated with the wide spectrum agent since 1951[1] and returned to normal function. Treatment has been used in teeth where caries had penetrated beyond the halfway mark in the dentin.

Cause of Inflamed Pulps—Action of the toxins of gram-positive and gram-negative organisms present in the caries, is the active cause of the inflamed pulp. In some instances, irritation, followed by inflammation of the pulp with evidence of root-end osteitis, is induced by the chemical action of acids of dental cements which penetrated the underlying dentin. Both situations of inflammation of the infected dental pulp have responded to the therapeutic action of the antibiotic agent.

Therapeutic Progress Noted—(1) Formation of dentinal bridges, (secondary dentin) bone repair at the involved periapical area of osteitis, (2) complete formation of apexes of roots of young permanent teeth, and (3) normal function of teeth emphasize the clinical therapeutic progress of these cases.

Change in Root Canal Substance—Evidence of obliteration of the contents of the root canal of certain teeth, perhaps calcification, has been observed after four to eight months of treatment. This of course is considered a non-pathologic entity.

1. *SK*—(12 *years*). *Before and after treatment.*

Procedures

Permanent molars and other teeth involved with deep seated carious lesions complicated with rarefying osteitis, have been treated as follows:

1. In acute situations, with a pain symptom at involved tooth, oxytetracycline is administered orally in dosage of 250-milligram capsule, with milk, every six hours, for 24 hours.
2. Caries is removed, some pulps were exposed during this operation some exhibited limited bleeding.
3. A fresh mixture is made, about 30 milligrams of oxytetracycline dissolved in a few drops of eugenol; zinc oxide is combined in the usual manner to form a thick mass. This mixture is placed directly upon the area of the floor of the cavity or exposed pulp.
4. Cement may be used to seal the treated tooth.
5. The tooth is x-rayed.
6. If any symptoms of pulpitis are observed after the second or third postoperative week, the treatment is removed and renewed.

Observations

1. In some of the cases treated in

*Author's Note: The oxytetracycline used in this study was furnished through the courtesy of Chas. Pfizer & Co., Inc., Brooklyn, New York.

[1]Maeth, H.: The Uses of Terramycin in Dentistry, DENTAL DIGEST **58**:307-309 (July) 1952.

Edward J. Ryan, D.D.S., personal communication. September, 1956.

William Ward Wainwright, D.D.S., personal communication, November, 1957.

F. A. Bull, D.D.S., Dental Director, Wisconsin State Board of Health, personal communication, February, 1958.

this manner, a change of the root pulp was observed on the x-ray view, as early as the twentieth postoperative day, as becoming more radiopaque.

2. The area of radiolucency about the root ends of teeth involved, in certain situations, has become less in extent after approximately one to two months of the described treatment.

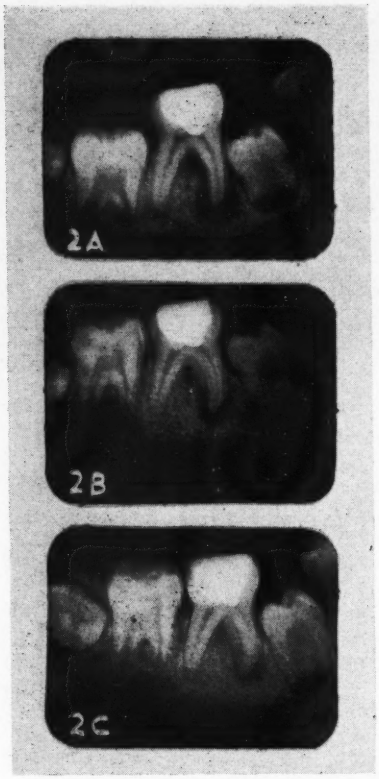
3. Under continued treatment over a period of six to eight months the content of some of the pulp canals has apparently become entirely radiopaque, and the zone of periapical osteitis replaced with dense, healthy appearing bone, revealed on the radiograph.

Comments

Oxytetracycline is used because of its known action upon a wide spectrum of organisms including many aerobic and anaerobic gram-positive and gram-negative bacteria. Oxytetracycline is an agent of choice in the treatment of dental infections when penicillin-resistant organisms are present or when a patient is sensitive to penicillin. (Accepted Dental Remedies, American Dental Association).

Teeth Remain Vital—In none of the cases treated has there been any postoperative pain or mobilized condition of the tooth. All teeth treated responded as vital to the electric pulp test, to a greater or lesser degree. These inflamed teeth responded to a smaller amount of electricity before treatment than they did a few months postoperatively.

Wide Difference in Ages—The ages of the patients treated varied from six years to adults of sixty. Patients have been under observation, with x-rays, as long as five years.



2. ***LA*—(11 *years*). *Before, during, and after treatment.***

Removal Not Indicated—There has been no indication for removal of any teeth treated in this manner. Some of the cases represented initial caries, while others were recurrent or presented residual caries under molar restorations.

Mechanical Interference Absent—In no case was there any mechanical interference with the contents of the root canal; medication was applied only in the coronal portion of the tooth. Curved roots responded as well as straight roots to the treatment.

Further Investigation of Value—It would be of interest to learn whether severely injured odontoblasts have been directly aided in the regenerative process of secondary dentin by the wide spectrum agent. The possibility of a relationship between the ultrastructure and function of bone to the presence and healing of the periapical lesion of rarefying osteitis may also be considered.

Effect of Caries to be Resolved—The presence of some small areas of residual caries in some of the treated teeth, close to the pulp, apparently did not disturb the healing process. Whether caries was inhibited or inactivated by the wide spectrum antibiotic is a question which might also be resolved by further investigation.

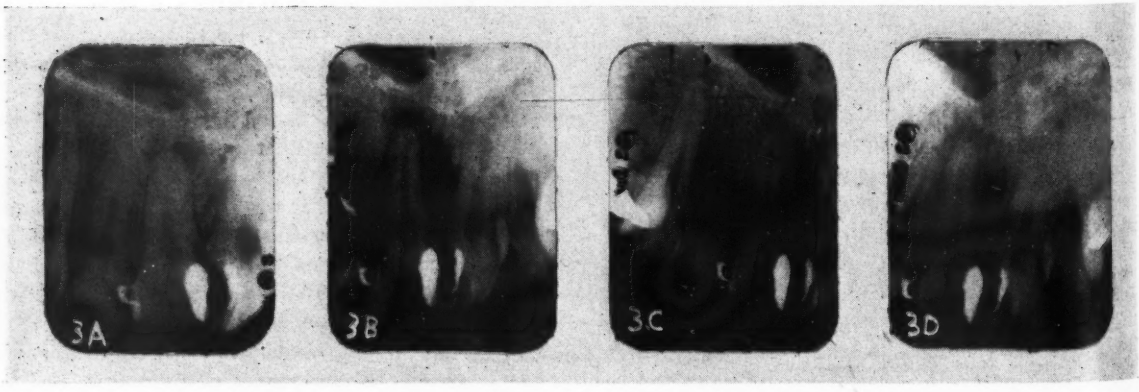
Further Study to be Inaugurated—A study of the penetration characteristics of oxytetracycline with radioactive isotopes would possibly produce interesting data relating to this method of pulp therapy.

Summary

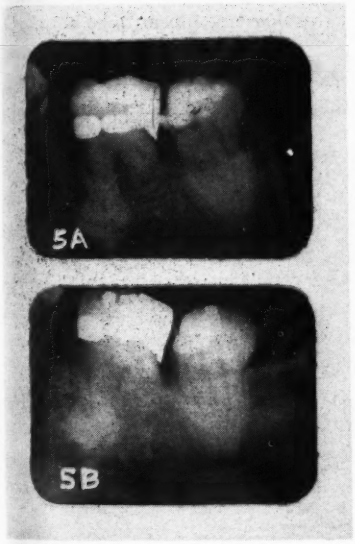
The treatment described here made possible the healing of infected, inflamed, viable pulp, without surgical intervention.

Inflamed, infected pulp is apparently a reversible condition, when

3. ***LW*—(18 *years*). *Before, during, and after treatment.***



4. ***FFS*—(50 *years*).** ***Before and after treatment.***
5. ***HIF*—(61 *years*).** ***Before and after treatment.***



viable, under treatment of oxytetracycline.

Healing of the pulp is (1) accompanied by the complete control of pain; (2) formation of dentinal bridges; (3) contents of some root canals are found to be obliterated or calcified; (4) periapical diffuse osteitis is found to be cleared up by bone repair; (5) complete development of young permanent root-ends.

All of the described change takes place despite the invasion and destruction of more than one-half of the dentin, and in most situations virtually all of the dentin, to the definite boundary of the pulp.

The treatment appears to be prompt, positive, and efficacious.

Mosinee, Wisconsin

Fires and Explosions from Anesthetic Agents

GEORGE J. THOMAS, M.D.

Common Sources

Do you know that fires can be initiated with an ordinary household type toggle or push button electric switch in the presence of flammable anesthetic agents? Many hospitals are spending thousands of dollars in providing safety from the tragedies of fire or explosion; however, some continue to overlook the danger of unrecommended electric appliances and accessories in anesthetizing locations.

Incident Reported

Recently, an anesthetist was administering di-vinyl ether to a child prior to the extraction of two teeth. Gauze was held over the nostrils and mouth with the left hand and the Vinethene® bottle was held in the hight hand. After the induction, the mouth was uncovered and the oral surgeon proceeded to aspirate accumulated mucus from the pharynx. At the completion of this preliminary step the anesthetist turned off the suction motor by pressing on the lever of an ordinary toggle cord-switch with his left hand. Instantly a flame appeared in his hand and around the electrical switch; it swept across the patient's face and neck, and followed the vapor trail to the anesthetist's right hand and thence to the mouth of the Vinethene® bottle and to the floor. The anesthetist immediately dropped the bottle and attempted to quench the flames that became active on the floor.

Results—From this incident a first degree burn occurred on the patient's cheeks, nose, and forehead. The hair on the head was singed. The anesthetist sustained first degree burns on both hands.

Causes—Investigation revealed that there was a sufficient concentration of Vinethene® vapor on the left hand, which had been holding the gauze, to be ignited by the partly exposed arcing in the cord switch used to disconnect the suction motor.

Moral

Do not use any type of electric equipment in a hazardous anesthetizing location unless it is labeled *explosion-proof*.

Adapted from *Newsletter* of the American Society of Anesthesiologists, **19**:1 (Jan.) 1955 in *Journal of the American Dental Society of Anesthesiology* **5**:19 (April) 1958.

The Trouble with the Staphylococcus

At the American Public Health Association's annual meeting, Doctor Frank B. Engley, Jr., University of Missouri School of Medicine, said that staph's ability to withstand environmental stresses makes it the "most persistent of the non-sporeforming bacteria."

He noted that staph may remain viable in the body, in cultures, in foods and on various inanimate objects in hospitals for prolonged periods. Some examples:

Air—several hours after suspension; blood samples—9-19 years; pus — 2½-3½ years; sputum — many days to months; culture—11-12 years; dessiccated cultures—30 years.

Frozen eggs—1 year; meat—60 days; vegetables—8 months; distilled water—20-30 days; tap water—2-4 days; ice—up to 66 days; water plus body fluids—over 500 days.

Clothes—several months; paper—51-70 days; walls—100 days; instruments—86 days; wood—35-130 days; dust—months.

From *Medical News* (Dec. 1) 1958.

IMMEDIATE *Temporary* PARTIAL DENTURE

for Esthetic Replacement of Anterior Teeth

JAY W. FRIEDMAN, D.D.S., Seattle

DIGEST

The technique described in this article is concerned with a single tooth replacement. The same procedure may be used, however, for multiple replacements. This technique affords an economic means for immediate replacement of anterior maxillary teeth, especially in an emergency. Permanent restoration may be accomplished when desired, months later if complete resorption and healing is required first. The entire procedure can be completed in forty-five minutes.

Technique

The objective was the immediate replacement of the maxillary left lateral incisor. A Richmond crown had loosened after many years of service and the remaining root was considered inadequate for reconstruction Figs. 1, and 2). The following steps were taken:

1) Baseplate wax, fashioned in the manner of a conventional partial denture palate, is adapted to the palate of the patient's mouth. The wax may be retained securely with denture powder. It is festooned for interproximal retention, from the lingual embrasures.

2) An alginate impression is then taken of the entire maxillary arch, with all teeth *in situ* (fractured crowns may be restored with inlay wax prior to the impression).

3) The alginate impression is removed with the palatal wax in the impression material (Fig. 3).. The tooth is extracted.

4) The wax is removed from the impression. A thin mix of quick-setting anterior plastic filling material is carefully flowed into the impression of the tooth or teeth to be replaced. The palatal portion may be filled in with this material, or denture repair acrylic may be used.

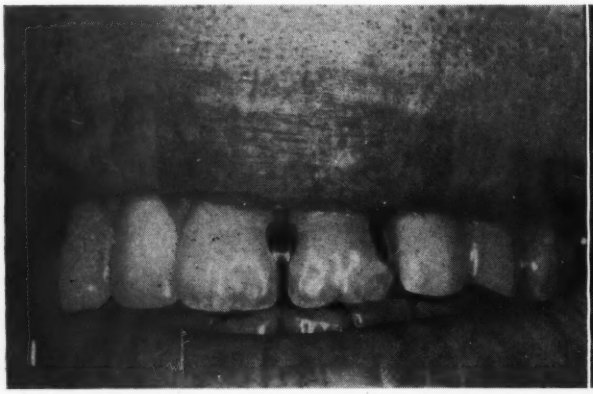
5) The impression is quickly reseated in the mouth.

6) The alveolar socket may be covered over with dry foil or plugged with a drain prior to reseating the impression to prevent the soft acrylic from being forced into the socket. (This does not appear to be harmful.)

7) Since considerable heat is generated in the setting of the acrylic it should be removed as soon as possible.

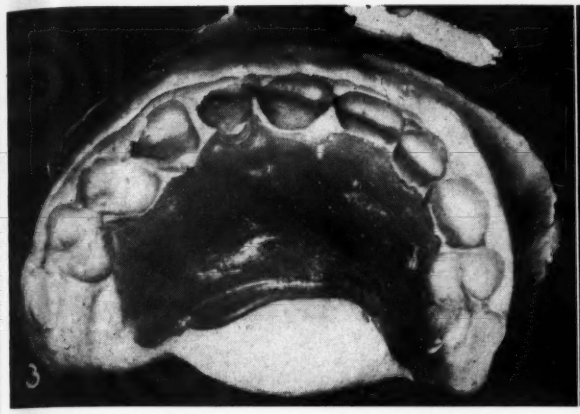
Time for Removal of Acrylic—Too rapid removal will result in distortion of the material. Delayed removal results in unnecessary discomfort to the patient. The proper time can best be determined by wrapping a small piece of the excess acrylic in cellophane and placing it in your own mouth. When the material has undergone initial hardening and is beginning to get uncomfortably hot, it is time to remove the impression.

Method of Removal—If the acrylic

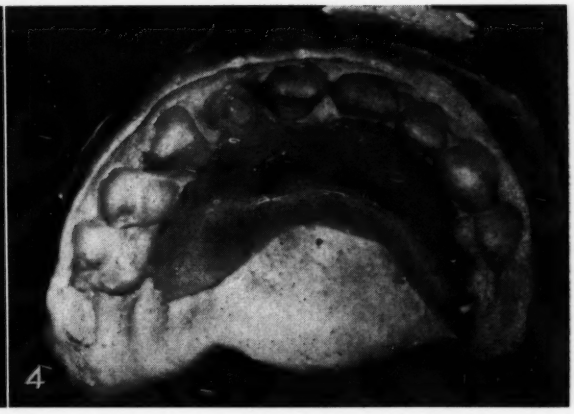


1. *Crown in place.*

2. *Remaining root portion. The crown is returned to place.*



3. *The alginate impression is removed with the palatal wax in the impression material.*



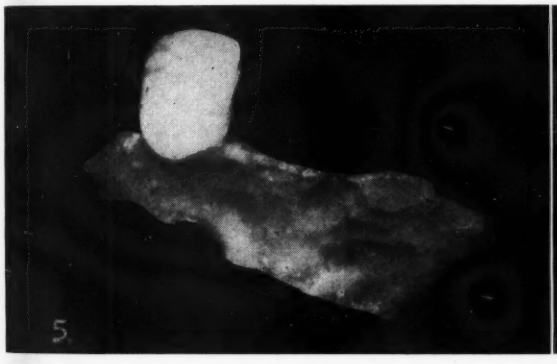
4. *Self-curing plastic is removed in the alginate impression.*

comes out in the impression, it can be left in place to complete the curing process. If it has remained in the mouth, it can usually be pried loose without too much difficulty, or distortion. Figure 4 shows self-curing plastic removed in the alginate impression.

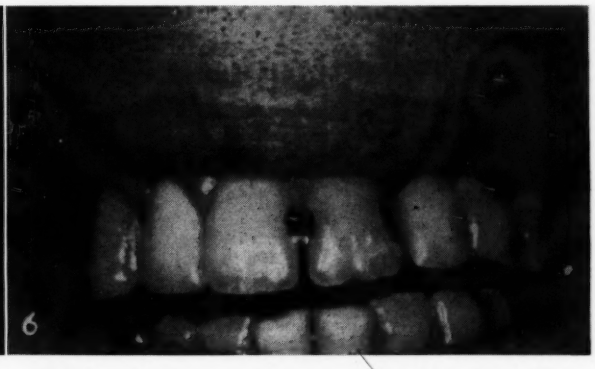
Retention Adequate—After the material has completed its cure, it may be polished (Fig. 5). In this case, a short palatal extension was sufficient for the single tooth replacement. It remained in place fairly well without denture powder, although the patient did use powder for the first few days.

Moderate Resorption Present — In Figure 6 the immediate temporary partial denture is shown replacing the maxillary left lateral incisor, after three weeks. Some resorption is evident at the lip-line.

115 15*th Avenue North*



5. *After the material has completed its cure, it may be polished.*



6. *Shows immediate temporary partial denture replacing the maxillary left lateral incisor after three weeks.*

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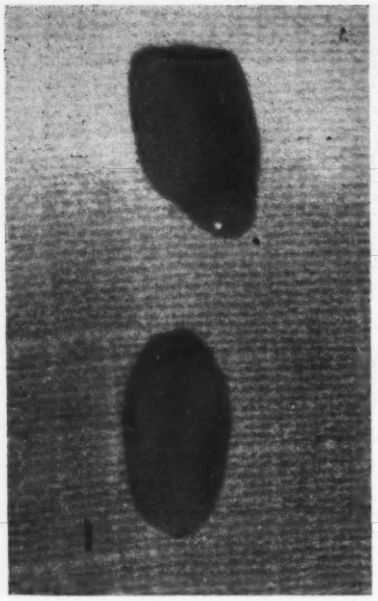


Plastic Implant in Correction of ALVEOLAR DEPRESSION*

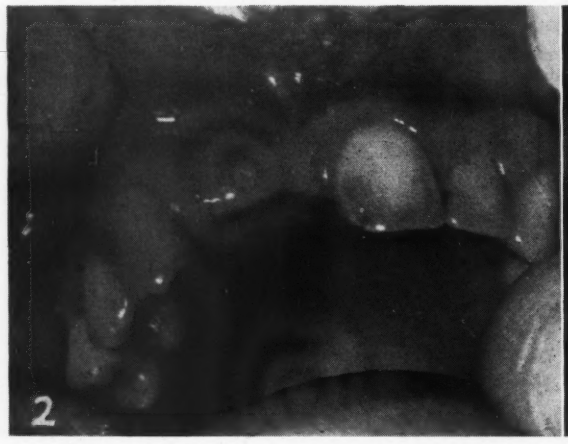
VIRGILIO MOOJEN DE OLIVEIRA, C.D., M.D., Rio de Janeiro

DIGEST

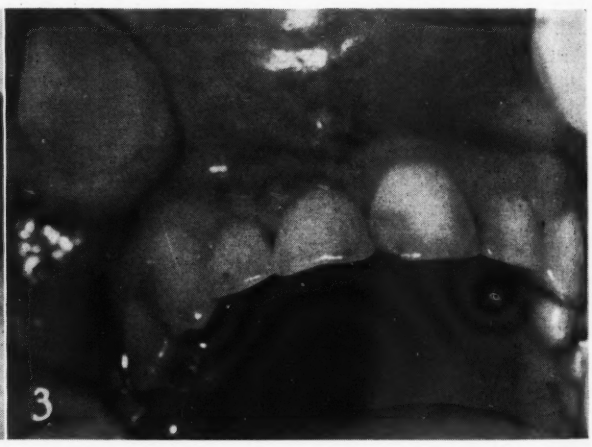
Alveolar depression as a result of extraction is undoubtedly a serious problem in partial prosthesis, especially when the upper anterior and bicuspid teeth are involved and the gingival tissue is visible in smiling or speaking revealing an interruption in the normal contour of the mucosa. In this article the step-by-step procedure for a surgical method of subperiosteal plastic (acrylic) implant to correct such a condition is presented.

*From the University of Brazil.

1. *The implant pad is made from a ready-made acrylic tooth.*



2. *The case before the surgical procedure without the partial denture. Note the alveolar depression.*



3. *The case before the surgical procedure with the partial in place. (Note the unsatisfactory esthetic effect.)*

4. *The cast, including the buccal fold.*

5. *Trying the acrylic pad on the cast for dimension and shape.*

Preliminary Considerations

Some years ago, when the technique of the Vitallium® subperiosteal implant for the retention of dentures was published, the possibility of using this process for the improvement of esthetic factors in partial dentures was considered for cases of alveolar depressions demanding artificial gingivae which are always unsatisfactory in appearance. Encouraged by the success of the first experiments in the implant technique, but encountering difficulty in manipulation of the metal, the use of acrylic, already frequently employed in orthopedic surgery, was tried.

The use of acrylic manipulated in the laboratory was a deterrent because of the possibility of the presence of a small amount of free monomer which may occur either in cold or hot curing process. A piece of acrylic taken from ready-made denture teeth was therefore adapted because it was made by a high temperature and high pressure process using only the polymer.

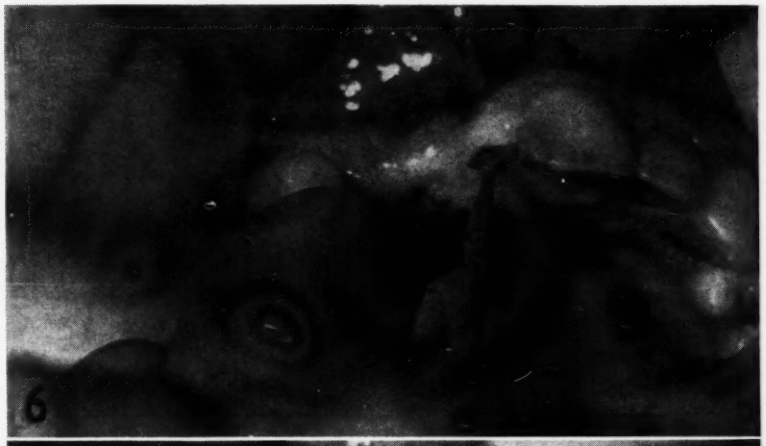
Case History

In the following case the patient was a girl whose upper central and lateral incisors had been missing since an early age. An appreciable depression from natural resorption had occurred (Fig. 2). She was wearing a removable denture which was unsatisfactory in appearance (Fig. 3).

Procedural Steps

The first step was a cast of the teeth, including all the buccal fold, made from an excellent hydrocolloid impression.

Preparation of the Acrylic Implant Pad—The implant pad is made from a ready-made acrylic tooth (Fig.1) by grinding the tooth selected with a laboratory stone. The dimensions and shape of the area (Fig. 5) to be built up are taken from the cast. To maintain the correct position within the tissue, during and after surgery, this acrylic pad is not polished, but is finished with coarse sandpaper. When it is completed, after trying it on the cast for size and shape, it must be carefully sterilized.

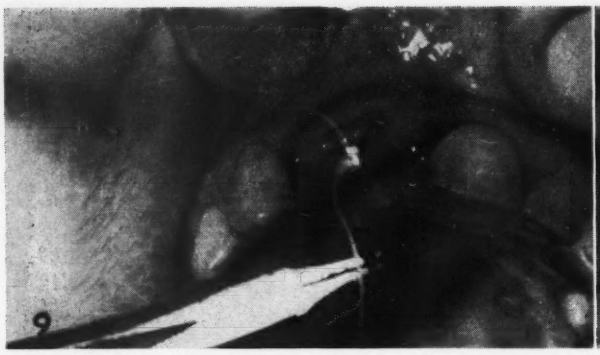


6. ***The incision at top of the alveolar ridge.***
7. ***Elevating the mucoperiosteal membrane.***
8. ***Inserting the acrylic pad under the periosteum.***

Surgical Procedure—The patient must be in excellent health with no pathologic alterations in the mouth. The following steps are taken:

1) The mouth is sprayed with an antiseptic solution and local anesthesia is applied.

2) An incision is made on the top of the ridge (Fig. 6) in the area to be corrected, cutting through all the mucoperiosteal membrane.



9 and **10.** ***The case is sutured with silk.***

3) The periosteum is elevated (not reflected) just enough to accomodate the acrylic pad (Fig. 7). That this space is actually being provided below the periosteum can be determined by feeling the edge of the instrument touching the surface of the bone.

4) The acrylic pad is inserted under the mucoperiosteal membrane (Fig. 8), and adjusted to the most correct position.

5) The incision is sutured with silk ligature (Figs. 9 and 10).

6) The partial denture may be adjusted to use without difficulty by cutting the gingival portion of the teeth. This will be an aid in closing and protecting the surgical incision.

Postoperative Care—An antibiotic with a large spectrum is prescribed as a preventive measure, and the patient is instructed to use any good antiseptic solution as a mouthwash after each meal. The suture is removed in a week and the case is ready for the construction of the new bridge.

Fitting the Bridge—Either a fixed bridge or a removable bridge may be constructed. In this case a fixed bridge was the choice. In Figures 11 and 12 the bridge is shown in position in the mouth.

Comment

Comparing Figures 3 and 11, taken from approximately the same angle, before and after surgical procedure, the difference in esthetic quality is quite evident, and the patient's appearance is obviously much improved.

This method has been employed during the past three years in about thirty cases. A few failures occurred in the beginning chiefly because of polishing the acrylic pad before the insertion. Sometimes the pad slipped out through the incision after some hours. The use of a rough pad corrected this difficulty. In some other cases the implant pad protruded from the tissue after a few days because of failure to provide space for insertion *under* the periosteum. The necessity of this precaution is emphasized for it is of vital importance.

Discussion

In the November 1957 issue of DENTAL DIGEST Hopkins and Olson[1] described a technique which had the same object as the technique presented here (the rebuilding of the alveolar ridge), but which employed grafts from blood vessels. This method is perhaps to be preferred for it is biologic. The surgical alveolar rebuilding with acrylic implant, as described herein, is of value because it is practical and a simpler procedure. A new material, inorganic bone, recently introduced, would seem to the author ideal for the purpose described herein because it is biologic and should be as practical for use as acrylic material.

Avenida Rio Branco 311

11 and **12.** ***The case with a fixed bridge assembled.***

[1]Hopkins, J. A., and Olson, J. R.: Aortic Artery Grafts to Remodel the Alveolar Ridge, DENTAL DIGEST **63**:491 (November) 1957.

Technique for a Temporary

ACRYLIC CROWN

LAWRENCE GOODMAN, D.D.S., South Ozone Park, New York

DIGEST

A temporary acrylic jacket crown can be made in less than fifteen minutes using the step-by-step technique described herein. They have been found to be esthetically satisfactory and to stand up adequately for the length of time for which they are intended. In an emergency they will even give months of service

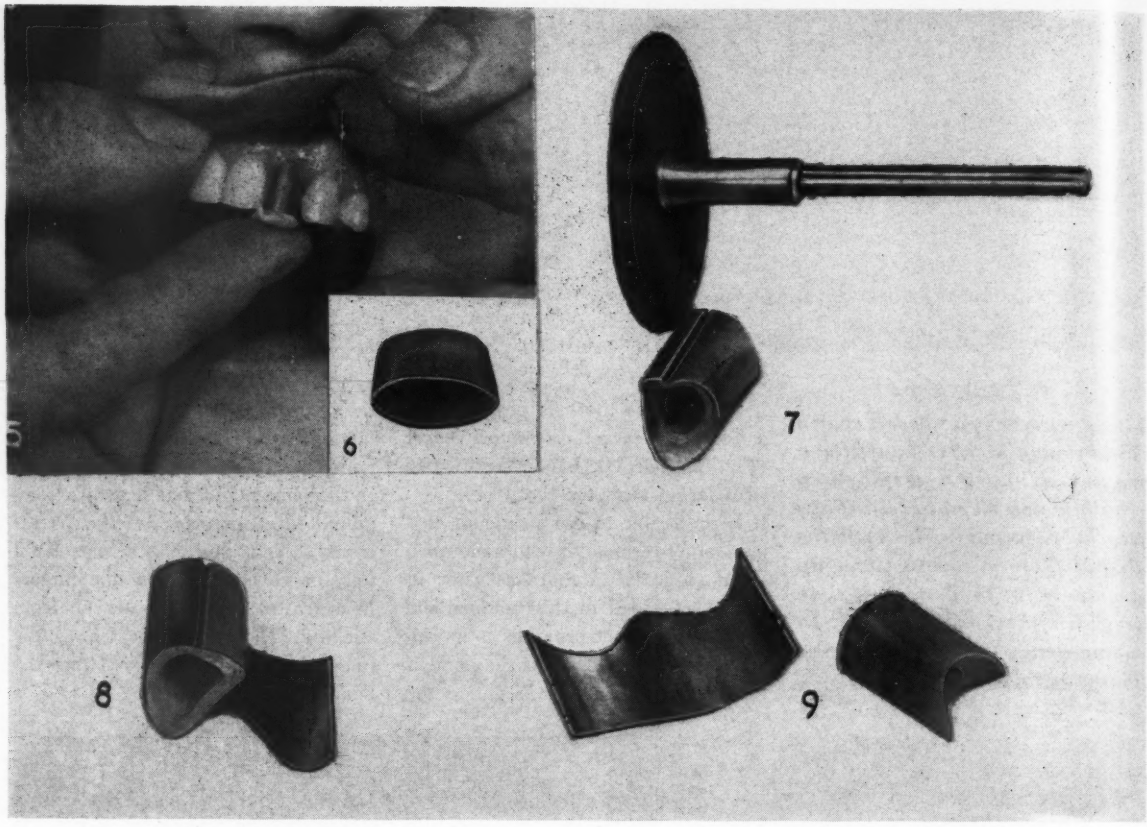
Technique

1. After the tooth is prepared for a porcelain jacket crown or veneer (Fig. 1) select a band one or two sizes larger than the tooth (Fig. 2). It is preferable to use an unannealed band and to festoon it with a mounted stone (Fig. 3). A more accurate fit can be obtained in this manner and the band will not crumble as an annealed band would. After the band is well fitted gingivally it is cut to the desired length incisally with a pair of scissors (Fig. 4).

2. Prepare a mix of rapid setting acrylic in a dappen dish using the desired shade.

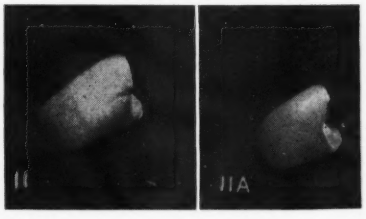
3. Fill the band with the acrylic and place it over the prepared tooth in the same manner as that of a compound tube impression (Fig. 5). It is advisable to smear some petroleum jelly or cocoa butter on the fingers in order to prevent the acrylic from sticking. Then, with the tip of the finger force the acrylic well into the band.

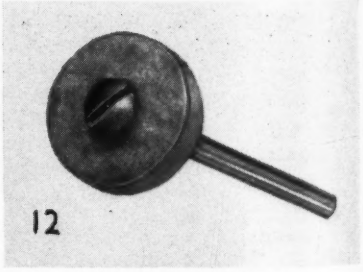
1. *Preparation for porcelain jacket crown. (All photographs by Topp Studio).*
2. *Band tried for size.*
3. *Stone used for festooning band.*
4. *Band cut for proper length.*



5. ***Impression being taken with acrylic.***
6. ***Band pinched labiolingually in order to secure contact points.***
7. ***Slit made in copper.***
8. ***Copper partly removed from acrylic.***
9. ***Copper completely removed from acrylic.***

10. ***Acrylic cone being tried for fit.***





11. ***Crown partly ground.***
11A. ***Crown completely finished and polished.***
12. ***Felt wheel for polishing.***

4. When there is a wide space mesiodistally the band may be pinched labiolingually after it is cut to the proper length. In this way contact points may be secured (Fig. 6).

5. When the acrylic is partly set,

remove the impression from the tooth, and place it on the tray or the warm sterilizer until it reaches its final set.

6. With a carborundum disc slit the band open (Fig. 7) at the thickest part of the impression and peel the copper away. It will come away clean when the acrylic is set. Figures 8 and 9 show the copper partly and completely peeled off the acrylic cone.

7. The acrylic cone is tried on the prepared tooth for fit (Fig. 10) and when satisfied that the fit is satisfactory it is ground into the desired tooth shape. Figures 11, and 11A show the crown partly and completely ground to size. A good method of polishing the crown is with a ¾-inch mounted felt wheel (Fig. 12) and any good grade acrylic polishing material.

Figure 13 shows the crown cemented into place with a temporary cement. When the correct shade of acrylic is used this temporary crown will look as good as the porcelain crown which is subsequently made to replace it.

135-06 109*th Avenue*

13. ***Temporary acrylic jacket cemented into place.***

A Self-Cleaning Dental Mirror

WALTER M. ORMES, JR., MAJOR (DC) USA

Choice of Methods

With the advent of the water-spray attachment for the dental handpiece, and then the high-speed handpiece, the ordinary dental mirror became virtually useless. An operator had the choice of working without the water spray, and thus risking thermal damage to the pulp, or using the water spray and viewing the field of operation through a mirror showing a distorted image due to water and debris.

Spray Necessary with High Speed Handpieces—Operating without the water spray was the solution with a slow speed handpiece, but with the high speed handpiece the cooling effect of the spray is a necessity to protect the pulp. It becomes apparent that the solution to the problem must lie in a mirror that would remain clear, while operating with the water spray attachment.

Air Blast on Mirror—The idea occurred that if a stream of air could be made to strike the surface of a mirror, the force of the air blast would blow away the water and debris and result in a clear image.

Preliminary Construction

Using a piece of plastic tubing 3 millimeters in diameter, a metal tip to fit the nozzle of the spray-bottle air syringe, and another metal tip to rest against the mirror and held in place with copper bands, a fairly satisfactory air-dried mirror was developed.

Disadvantages

This mirror, although better than an ordinary mirror, left much to be desired. The metal tip adjacent to the mirror, being round, would not properly direct the flow of air; the copper bands had a tendency to slip, causing the tip and tubing to twist out of position; and the instrument could not be sterilized without taking the bands off, removing the plastic tubing, and then reassembling after sterilizing.

Improvements

The following improvements were developed:

1. The easily removable mirror section is fabricated from cast aluminum, with a flat tip adjacent to the mirror proper so that the stream of air will sweep the entire surface of the mirror.

2. The handle of the mirror is a hollow tube for passage of the air blast, thus eliminating the copper bands used in its prototype.

3. The plastic tubing slips off the end of the mirror handle easily, permitting sterilization of mirror and handle as a unit.

4. The tube with tip for attachment to the air syringe, and the clamp complete the instrument. This clamp is used to lock the air syringe in the "on" position.

Completed Assemblage Satisfactory

This mirror has been used clinically with a high-speed handpiece with built-in water-spray attachment, and has been found to be satisfactory in both crown-and-bridge and operative procedures:

1. The air blast from the syringe keeps the surface of the mirror clean.

2. It requires only occasional wiping regardless of whether diamond stones, discs, or burs are used in the

(*Continued on page* 42)

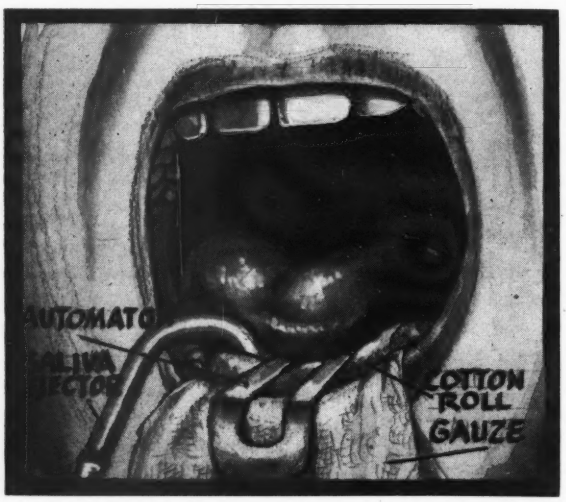
1

Clinical and Laborato

Protection of Alginate

W. E. Hubler, D.D.S., Ryder, North Carolina

1. After a can of alginate has been opened it may be placed in a plastic bag and tied with a rubber band. This will protect the powder from the absorption of moisture.

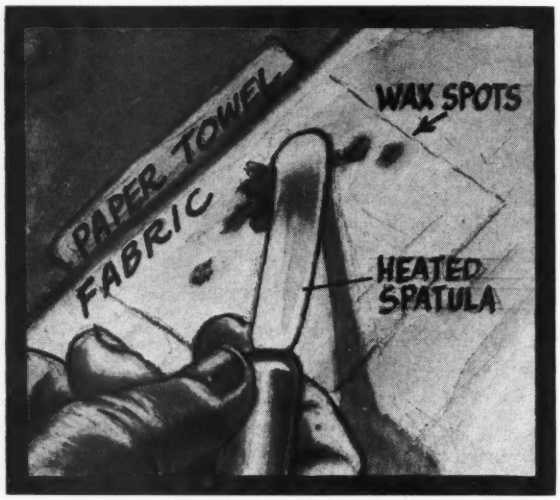


2

Saliva Control

Eugene M. Dasent, Lt. Colonel, (DC) Fort Riley, Kansas

2. A piece of 4 by 4 gauze is placed *under* the tongue and carried *over* the chin. The saliva ejector is placed *back* of the gauze. The cotton rolls are placed over the gauze.



3

Removal of Wax Spots

F. Iuorno, D.D.S., Utica, New York

3. Place an absorbent paper towel under the fabric. Apply heat to the wax with a warm spatula. The wax will melt and be absorbed by the paper towel.

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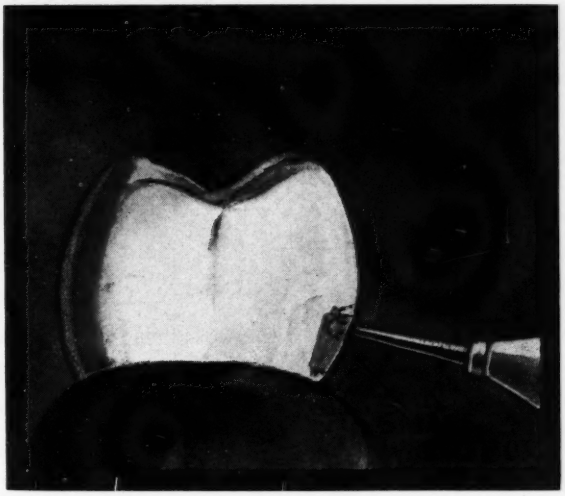
SUGGESTIONS . . .

Increasing Retention of a Gingival Inlay

Henry L. Boris, B.S., D.D.S., Chicago

4. Use a small wheel bur to create notches in the cavity preparation and at approximately the same positions in the casting. This will create a cement "lock" and will increase retention.



4

Stability of Lower Occlusion Rims

John C. Wienski, D.D.S., Stamford, Connecticut

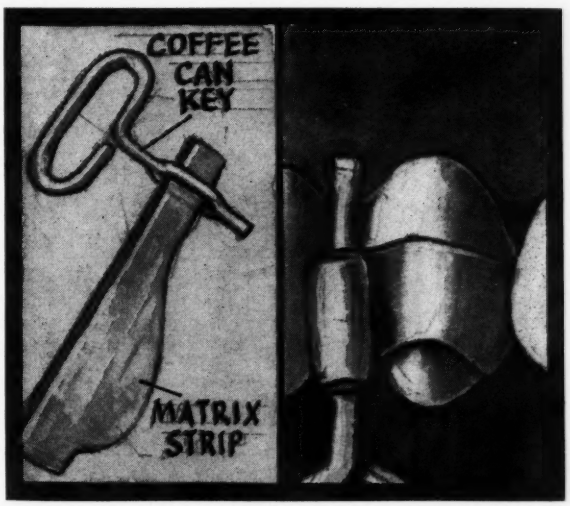
5. Adapt foil to the stone model. Make a thin mix of zinc oxide-eugenol and place in the wax occlusion rim. Seat on the model and hold in place for 2 or 3 minutes. When the wax rim is placed in the mouth it will adapt to the tissues more closely, be more stable, and more comfortable.

5

A Matrix Holder

S. M. Dooreck, D.D.S., Brooklyn, New York

6. The key from a coffee can makes an excellent device to hold a matrix strip in position.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 35 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S Page

TWO RECENT articles in the *British Dental Journal* bring a refreshing and philosophic point of view to two subjects that are in the forefront in present dental practice.[1,2]

In the first article Townend pleads for somewhat less haste ("*masterly* inactivity") in removing the first bicuspids as a method to correct malocclusions. The extraction of bicuspids has a place in the management of some types of malocclusion. Unfortunately the practice has got out of hand in some places and among some orthodontists. Children are being deprived of sound teeth because "extraction of the first premolars has become a sort of cure-all in the minds of many would-be orthodontists. There is, of course, no doubt that it is a valuable procedure, particularly in cases of that very common anomaly the buccally placed canine, but in the writer's opinion it is often carried out too early, in some cases before the tooth has erupted and without due consideration of all other factors in the case. . . . Every child has an eruption schedule and a growth schedule. These schedules are probably inherited through different genetic channels; so they can be either congruous, in which case there is a tendency towards normality, or incongruous in which case apparent anomalies develop which may disappear as one or the other schedule catches up. Eruption may be ahead of growth and *vice versa*.

"It is difficult to predict with any degree of precision what are the potentialities of a child in either of these functions of development, more particularly that of growth, and in my opinion when one is in doubt it is wise to defer treatment until the pattern becomes clearer, in other words to practice masterly inactivity.

"If, for instance, we see a child of 6 years with misplaced upper laterals or with irregular lower incisors, it may be that eruption is ahead of growth. In many such cases extraction of the deciduous canines will give that little extra space that is needed and the irregular teeth will straighten themselves under the influence of lip and tongue, if these pressures are normal.

"On the other hand, when one sees teeth erupting with wide diastemata between them it may be that growth is ahead of eruption, and when eruption catches up with growth the spaces will close. It should always be remembered that there are very wide ranges within the normal, and it is most unwise to dogmatize that such and such should appear or should be done at this or that age. Dentally speaking, a child has three ages, its temporal age measured from its birthday, its eruption age, and its growth age. There may be quite wide differences between the three and the first is the least important from the orthodontic point of view."

In the second article, Shovelton and Marshland examined the pulp in cavities that "were prepared in teeth using tungsten carbide burs and diamond instruments at speeds varying between 8,000 r.p.m. and 37,000 r.p.m. In some instances cavities were prepared uncooled, while in other teeth cooling agents were used. Beneath cavities prepared without coolant quite a severe degree of pulp damage may be seen both in teeth extracted immediately and in those removed after varying experimental periods. The severity of the reaction is related to depth of cavity. At higher cutting speeds pulp damage extends beyond the limits of the tract of dentinal tubules directly involved in the cavity.

"Cooling affords a large measure of protection to the dental pulp but does not completely prevent tissue change beneath cavities prepared with diamond instruments."

The authors emphasize that in high speed procedures the coolant *must reach the floor of the cavity* and that the absence of pulpal pain is not an assurance that the pulp has not been injured.

[1]Townend, B. R.: Masterly Inactivity, Br. D. J. 104:412 (June 3) 1958.
[2]Shovelton, David S., and Marsland, Edward A.: A Further Investigation of the Effect of Cavity Preparation on the Human Dental Pulp, Br. D. J. 105:16 (July 1) 1958.

MEDICINE and the Biologic Sciences

Multiple Sclerosis

The course of multiple sclerosis is extremely variable. Remissions and relapses are frequent. Most patients, however, eventually become severely disabled. In about 10 per cent of patients, the resistance to the disease is high and the disease may remain quiescent for years. A good recovery from the initial attack with slight and infrequent relapses usually denotes a benign form of the disease. In about 10 per cent of instances onset is insidious and the course steadily progressive. This form of disease is more common among middleaged than among young patients.

The onset is abrupt and may be spontaneous or precipitated by excessive fatigue, infection, trauma, or emotional stress. Often lassitude, easy fatigue, headache, irritability, difficulty in concentrating, and migratory pains in the limbs may precede or accompany the appearance of more specific symptoms.

The initial symptoms may be disturbed vision, giddiness, or tingling or numbness, usually transitory. Retrobulbar neuritis with multiple sclerosis may be manifested as blurred vision in both eyes, scotoma or pain in and around the eyes. Paresthesia of multiple sclerosis begins abruptly and spreads rapidly. Motor weakness, often slight, is another early manifestation. Cerebellar signs, such as dysarthria and a reeling gait, may be prominent at onset.

Multiple sclerosis involving the brain stem only may be manifested as acute or subacute encephalitis, by focal signs such as double vision and Bell's palsy, or as vertigo. In about 70 per cent of patients, the cerebrospinal fluid is abnormal sometime during the disease.

When diagnosis of multiple sclerosis is presumptive, the patient should be admitted to the hospital to confirm diagnosis, ensure complete rest, and correct abnormalities in general health. The greatest possible recovery from early attacks of the disease is assured by an adequate period of rest in bed during the active phase of the disease followed by a convalescence of two to six weeks. To prevent relapses, careful attention to general health and mode of life is probably the most effective treatment. Avoidance of fatigue, infection, trauma, and emotional stress may be helpful.

McAlpine, Douglas: Multiple Sclerosis, British M. J. **5017**:475-480 (March) 1957.

Anesthesia and Operation —Preparation

The risks of anesthesia and operation may be reduced by careful preparation of the patient. Most hazards are avoidable.

Tachycardia detected in a patient about to have surgery is more often due to unsuspected heart disease or low blood volume than to apprehension. Operation on such patients should be delayed until the basis of the tachycardia is established. Patients with complete heart block are subject to sudden cardiac arrest which may occur during anesthesia and operation. Unexpected cardiac failure in a patient scheduled for operation should not be treated by intravenous digitalization since vomiting induced therapy may interfere with anesthesia.

Studies of pulmonary function should be made for chest surgery candidates with emphysema. Death may result from accumulation of secretions in the respiratory tract and inadequate pulmonary ventilation.

In persons with bronchial asthma morphine, curare, thiopental, and cyclopropane may cause bronchospasm. These agents, therefore, should not be used.

Persons with chronic respiratory obstruction often cannot cooperate when anesthetized. Therefore, when the airway is encroached upon by masses about the mouth, pharynx, cervical or mediastinal areas, a noncollapsable endotracheal tube should be inserted while the patient is awake. It is essential that inquiry be made concerning preoperative drug therapy. Prolonged use of cortisone, reserpine, chlorpromazine, or promethazine may affect the circulatory system when the patient is subjected to anesthesia and operative stress. Patients who have been treated with cortisone for long periods should continue to receive the drug before and after operation. In some cases an increase in dosage is advisable. If blood pressure is reduced during or after operation, vasopressor drugs, blood transfusions, and intravenous hydrocortisone should be administered. Reserpine therapy should be withheld for about ten days before a patient is scheduled for surgery. Continued use of the agent may lead to hypotension at any time during or after the surgical procedure.

Convulsions are potential hazards in a febrile, dehydrated child who is given a general anesthetic. Such patients should receive intravenous fluids for an hour or two before a surgical procedure.

Blood volume deficiencies of more than 1,500 cubic centimeters should be reduced by administration of 500 cubic centimeters or more of blood before operation. A greater volume is required when hypotension occurs in a hypovolemic patient. The anesthe-

(*Continued on page* 35)

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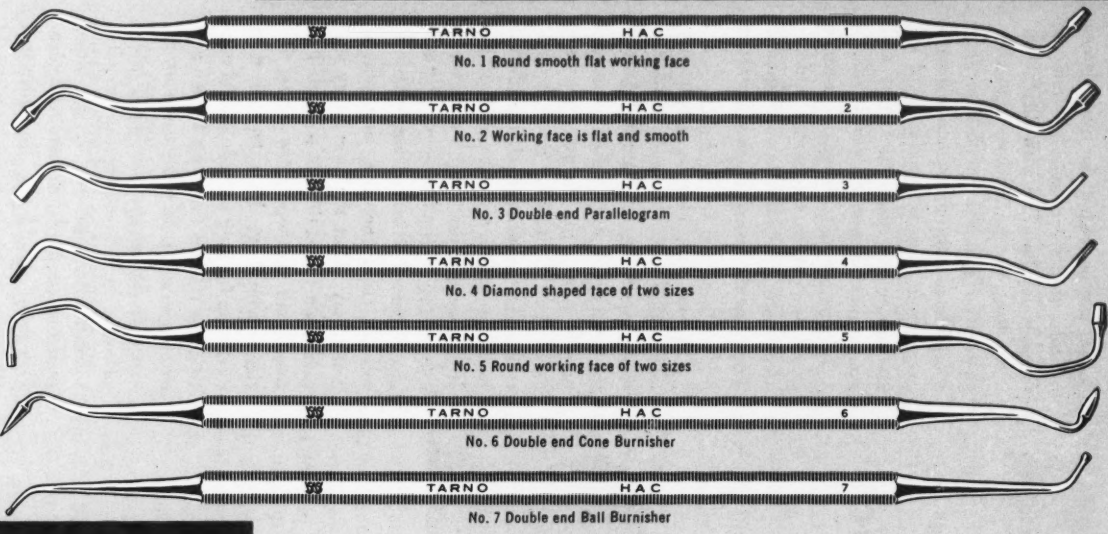
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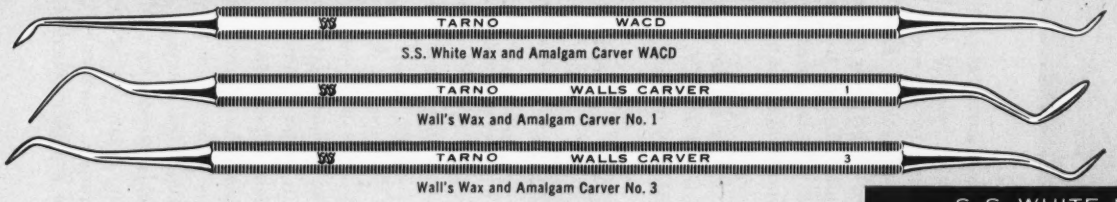
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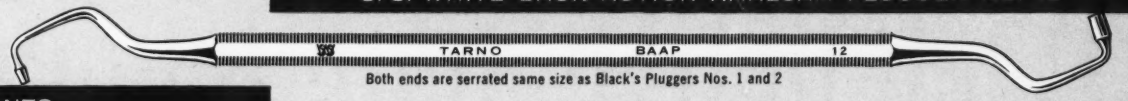

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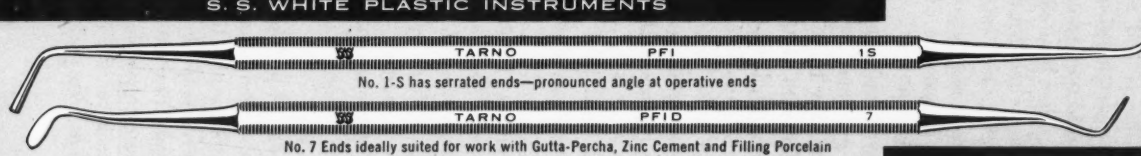
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tized hypovolemic patient my have sudden and alarming hypotension as a reaction to relatively minor blood loss; even changes in body position may be intolerable. Hypovolemia should be suspected particularly in patients with neoplastic or ulcerative lesions of the large bowel, persons who have been bedridden or in body casts for long periods, elderly subjects, and patients who have had several operations.

Although the interval between ingestion of food and anesthetization is usually designated at four or five hours, gastric emptying may be delayed by apprehension or injury. If operation is urgent and general anesthesia is imperative, vomiting should be induced.

Eckenhoff, James E.: Some Preoperative Warnings of Potential Operating-Room Deaths, New England J. Med. **255**:1075-1079 (*December*) 1956.

Obesity

Excessive caloric intake is the usual cause of obesity. Often this occurs because of lack of knowledge of food values of the danger of obesity, or from a lack of will power or because of psychic needs for food. Many persons believe that obesity is a sign of health and it is normal for people to grow fat as they grow older.

Among the reasons for overeating are habit inculcated by an overzealous mother, gratification from flavor of foods, feeling of repose and comfort produced by a full stomach, temporary respite from difficulties not mastered, no diminution in appetite with diminished need for food, and greater requirement for food in youth than in later years but food habits of early years retained.

In many instances, obesity is not a disease per se but symptoms of a more underlying psychiatric abnormality. Obesity is not caused by an economy of food or by increased absorption of food from the gastrointestinal tract.

(*Continued on page* 37)

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 30 *and* 31)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor
DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.
$10 will be paid on publication for each suggestion that is used.

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11. The Action of Local Anesthesia
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There is no significant difference in the body mechanism of obese and slender people as regards digestion, absorption, assimilation, metabolism, or specific action of foods ingested. The body can adjust itself to reduced food intake by reduction in energy expenditure.

It is generally agreed that body build is inherited but that obesity is not except for a tendency to a greater appetite and less physical activity. Obesity in a family is a product of the environment and development of similar eating habits in members of the family. A long-established habit of eating certain quantities of food has a profound influence on the appetite. The quality of food consumed is sometimes more important than the quantity.

Statistics show that obesity shortens life expectancy and makes people less comfortable. The incidence of varicose veins, symptoms referable to the joints of the lower extremities, backache, hernia, and toxemia of pregnancy is high among obese people. The operative risk is much greater among obese patients than it is among slender patients. There is a definite correlation between arteriosclerosis and the fat content of the blood and body. Slender people have fewer complications of atherosclerosis. The incidence of gallstones and faulty liver is increased among obese persons. Weight reduction is one of the best forms of therapy for obese patients who have hypertension.

Obesity is one of the most frequent avoidable causes of heart-failure in patients with organic heart disease. A person who is overweight must consume a greater amount of oxygen for a given amount of work and the demand on the heart is consequently increased.

The incidence of diabetes is extremely high among fat people. Most of the diabetes detected in adults is found in overweight persons.

Increased physical activity is a highly improbable method of weight reduction. One pound of excessive adipose tissue yields 3500 calories. To lose two pounds of adipose tissue an average person would have to walk 10 extra miles each day for a week without increasing his food intake. Weight reduction can be attained only by low caloric intake.

Jones, George M.: Obesity and the Reduction Diet, Postgrad. Med. **20**: 451-456 (*November*) 1956.

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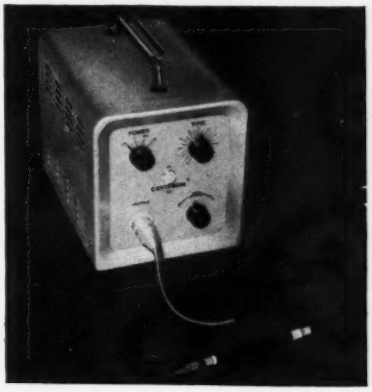

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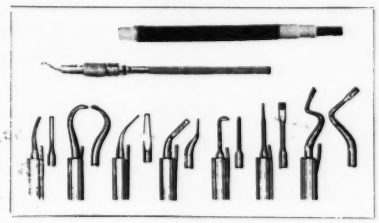

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The majority of emollients, either cosmetic or pharmaceutic, are mixtures of an oil and water. An emul-

(*Continued on page* 39)

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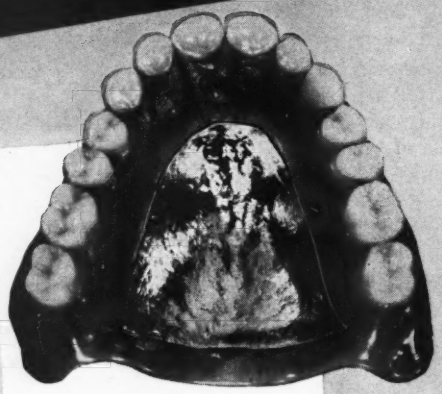

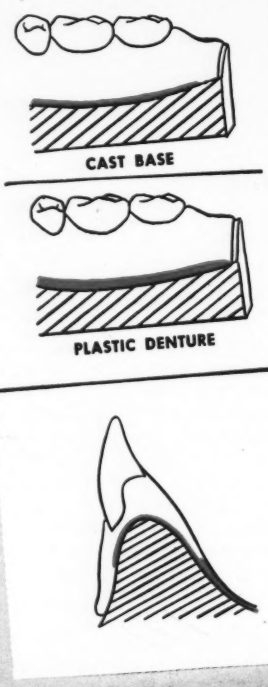

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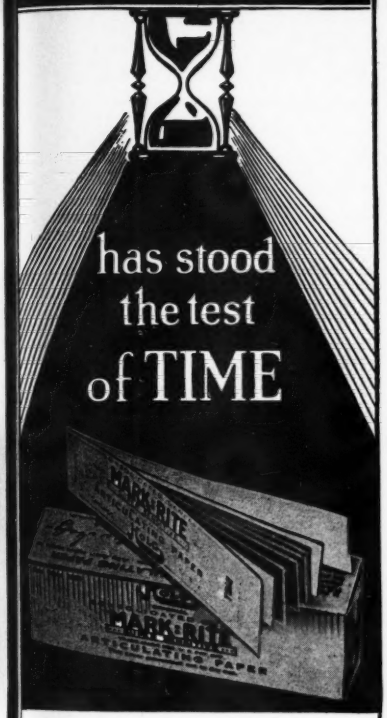

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sifying agent is employed to keep the oil and water well mixed. Also a perfume may be added. An oil with a low melting point makes an emollient feel greasy on the skin. When the oil has a high melting point, the residual oil does not feel greasy.

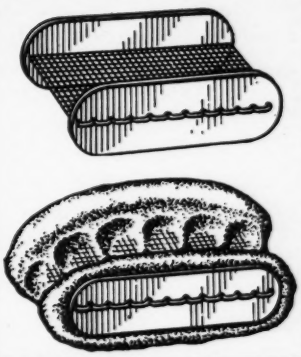
When emollients are applied on the skin surface, some of the water may be taken up by the stratum corneum, but most of it evaporates into the air. The nonvolatile oil of the emollient remains on the skin. To act as a "lubricant" the oil should locate between the lamella of the stratum corneum thus allowing the lamellas to slip over one another and permitting the skin to flex without breaking the stratum corneum. Lanolin and lanolin mixtures seem to penetrate the skin better than do other oils, particularly petrolatum.

It is recognized that neither an externally applied oil nor the natural oils can keep the stratum corneum flexible without the aid of water. Water is the only known plasticizer for keratinized tissue.

The symptoms of dryness are relieved by an application of a film of oil to the cutaneous surface. The film functions in two ways: (1) the oil replaces a roughened scaly surface with a smooth film and small spicules of cornified epithelium which extend above the surface and produce roughness are "cemented down." (2) If the oily films are occlusive they will retain the evaporation of water from the cutaneous surface and help keep the stratum corneum hydrated and flexible.

The natural lipid film on the surface is not an occlusive barrier. The major barrier in the skin is below the stratum corneum. Thus, the surface film of natural lipids is not an adequate barrier to prevent flow of water from the stratum corneum. There is a barrier between the confined epithelium and the underlying moist tissues. The cornified epithelium therefore loses water to the environment more rapidly than it receives water from its underlying tissues. It tends to dry out, but fortunately it is a hygroscopic material and does not dry out completely in atmosphere of normal or high relative humidity. When the relative humidity is low, however, as during winter months, the stratum corneum may dry out. Therefore, the action of the simple emollients is primarily a surface phenomen and possibly the importance of the penetration of the oil into the skin has been overemphasized. An effective emollient must be so constituted that it will help the stratum corneum maintain an adequate water control.

RITE BITE
TRAYS
SAVE YOU
TIME & GOLD



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Blank, I. H.: Action of Emollient Creams and their Additives, JAMA **164**:412-415 (*May* 25) 1957.

(*Continued on page* 40)

BUY SECURITY BONDS

Ultrasonics

Ultrasonics is also called nonaudible sound. It is a physical energy that is completely different from all other radiant energies. It is not represented in the electro-magnetic spectrum and depends for its production and transmission on matter. It changes any matter in its path from a mechanically quiet into an oscillating state. This is a characteristic physical property of ultrasound. It appears that the ultrasonic effect is due to mechanical influence of the rhythmically oscillating, acoustic energy as well as to heating caused by absorption and conversion energy.

Ultrasonic radiation has been used therapeutically in destructive and nondestructive doses. The application of destructive ultrasound, however, is essentially still at the experimental stage. There is no consensus yet regarding an optimal dose and the recommended therapeutic dosage is still empirical.

The dose is dependent on both the sound intensity at the surface of the transmitting sound head and the duration of treatment. There are three methods of treatment: (1) The stationary method, whereby the treatment head remains in place, requires the lowest intensity, but has the disadvantage of presenting the greatest possibility for interference and of allowing the treatment of only a small area. (2) The slightly moving sound head method, which eliminates interference phenomena and therefore provides somewhat larger doses, is still applicable to a small area. (3) The moving or massaging sound head, whereby the transducer is moved over the part to be treated, permitting the largest doses and the treatment of large areas, allows the sound intensity to be determined by the thickness of the soft tissue overlying the anatomic parts to be treated. The time element of the dosage is dictated by the size of the area. The moving sound head is now almost exclusively used in the United States.

Nondestructive ultrasonic therapy has been recommended for many conditions but has been applied chiefly in the treatment of rheumatic, inflammatory, and traumatic lesions of the neuromuscular and musculoskeletal symptoms. It is generally agreed that ultrasound in a valuable therapeutic device. It cannot improve or remedy any conditions that heretofore were not amenable to other forms of treatment.

Ultrasonic therapy should not be considered a panacea. It is contraindicated whenever its use would delay the application of other forms of proved therapy. This is especially true for malignant tumors, which constitute a definite contraindication not only because of such a delay but also because local growth of the neoplasm and metastatic spread have been observed after ultrasonic therapy.

Friedland, Fritz: Present Status of Ultrasound in Medicine, JAMA **163**: 799-803 (*March* 9) 1957.

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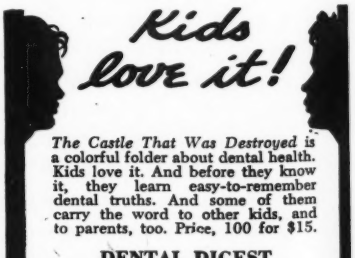
Oral Diagnosis of Systemic Disease

EUGENE S. HOPP, M.D., San Francisco

Enamel hypoplasia may be produced during the formation period of enamel matrix by nutritional deficiency (particularly vitamins A and D), endocrine dysfunction and generalized infection as in the exanthemas, and prenatal syphilis. Gingival hyperplasia may occur in puberty and in pregnancy and sometimes in patients receiving diphemylhaydantoin sodium. Oral pigmentation can be caused by the administration of a bismuth, silver, or lead preparation. Quinacrine hydrochloride produces a yellow-brown pigmentation in the cuspid regions and a yellowish oral mucosa. Anemia may be readily diagnosed by examination of the tongue. There are a number of mouth lesions which are closely associated with tension and nervous strain. These include periodontal disease, aphthous stomatitis, acute necrotizing gingivitis, erythema multiforme, lichen planus, and probably pemphigus. It has been strongly suggested that the lesions of lichen planus, some 50 per cent occurring only in the mouth, are the product of psychic stimulation. Chronic emotional tension, producing a change in the chemistry of saliva, can be the cause of periodontal disease.

From *Journal of the American Medical Association* **168**:748 (Oct. 11) 1958.



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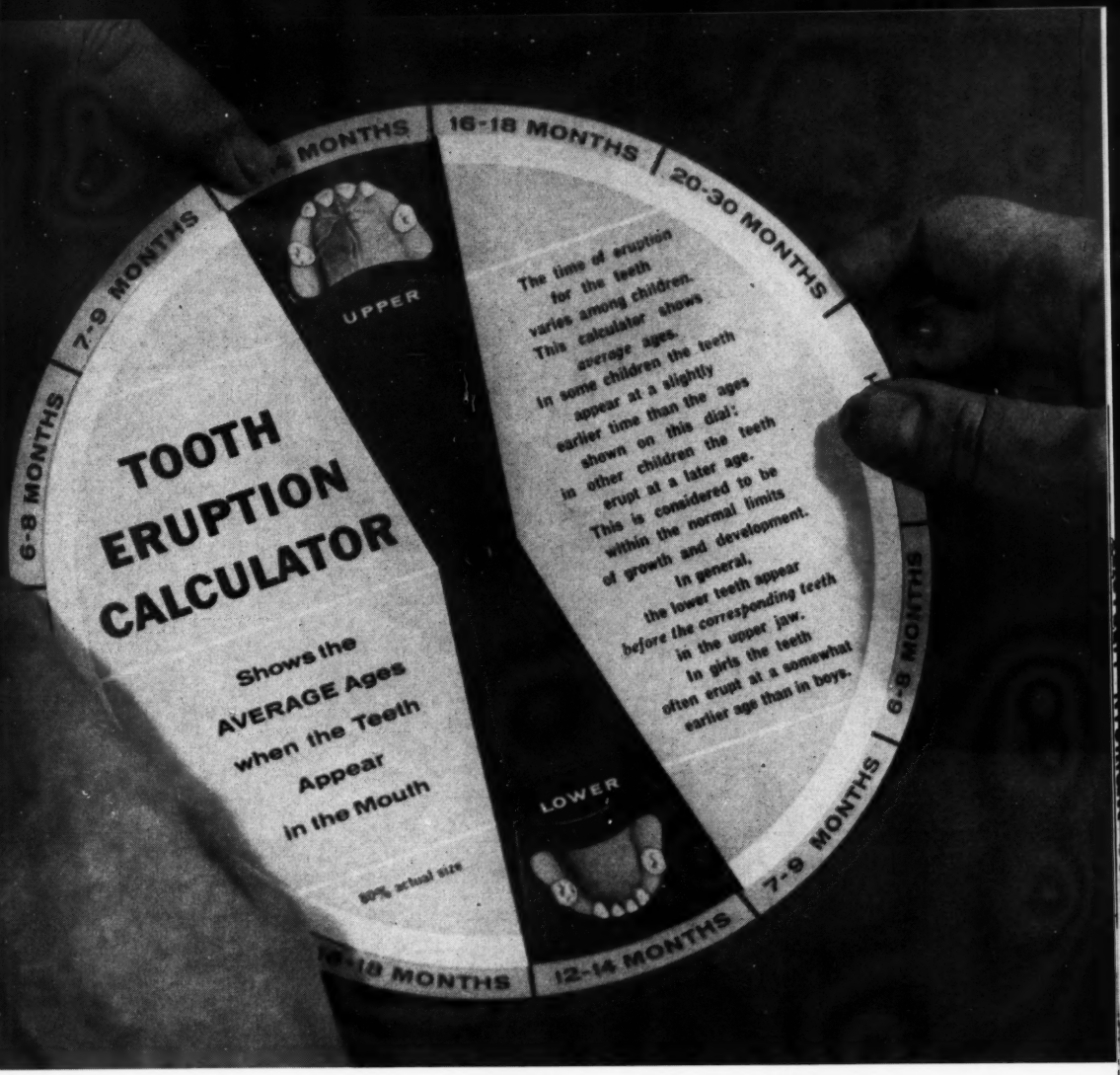
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when the Teeth
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UPPER
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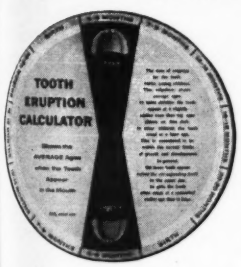
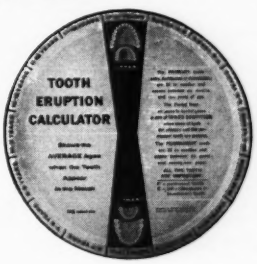
The time of eruption for the teeth varies among children. This calculator shows average ages. In some children the teeth appear at a slightly earlier time than the ages shown on this dial; in other children the teeth erupt at a later age. This is considered to be within the normal limits of growth and development.
In general, the lower teeth appear before the corresponding teeth in the upper jaw. In girls the teeth often erupt at a somewhat earlier age than in boys.

What Every Parent Should Know—

about his child's teeth



The *first* tooth is a family triumph! . . . Each succeeding tooth, to the total of 52, should be of major interest to parents . . . *Show* parents on a dynamic time-wheel *what* teeth should appear *where* and at *what* time.



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Although there are 44 separate views of the child's mouth on this chart, parents will not find it confusing, for only the two (or four—in the case of mixed dentition) which apply to a certain age level are visible at one time. The dials (one on each side of the two-sided chart) rotate to show upper and lower teeth through 14 stages of development.

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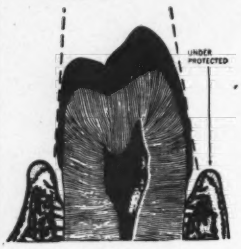
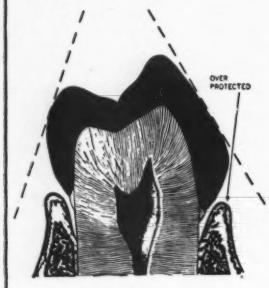
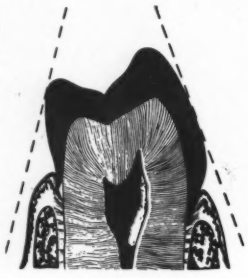


UNDER CONTOURED



OVER CONTOURED



NORMAL CONTOURED

Wrong contour means periodontal disease

The axial or circumferential contour of cast gold crowns is perhaps more often neglected than even the occlusal anatomy. Its importance cannot be over-emphasized. The illustrations show three contours, the first under-contoured, the second over-contoured, and the third with the correct contour. Dotted lines show the manner in which food is deflected.

The under-contoured crown probably causes the greatest amount of damage by affording no protection at all to the investing tissues. The over-contoured crown, however, affords too much protection and will cause stasis of these tissues. The normal gives protection but affords proper stimulation to the investing tissues.

(Above condensed from Ney Bridge & Inlay Book)

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A Self-Cleaning Dental Mirror

(*Continued from page* 29)

handpiece.

3. The noise of the air rushing over the surface of the mirror is not objectionable to the patient.

4. By tilting the mirror toward the tooth being operated on, the field is dried for better observation in a matter of seconds.

5. The assistant, by not having to operate the air syringe, is freed for other duties.

Summary

With the use of water-spray handpiece attachments and high-speed dental handpieces, the conventional dental mirror is virtually useless. In order to obtain proper vision, a mirror that is self cleaning must be used. The mirror described is such an instrument. It is not difficult to manufacture, is satisfactory in cilinical use, and has no maintenance or sterilizing problem.

Adapted from *United States Armed Forces Medical Journal* **9**:983 (July) 1958.

Contra-Angles

A Medical Correspondent Looks at Fluoridation

The old saw "You can lead a horse to water, but you can't make him drink," has taken on a new twist by a correspondent of *The Lancet*. In England the expression has been suggested, "You may take fluoride to the people, but you cannot make them drink it."

That statement is not strictly or altogether true here in the United States. Most people who live in areas where the water is fluoridated drink the water without question or a debate within their conscience. In fact, most people accept the idea that fluoridation is good for their teeth.

There does, however, remain a hard core of resistance to the theory of fluoridation. In some communities the procedure has been voted down and in others fluoridation has been discontinued. To reach this resistance force and to change the point of view the British correspondent has suggested that we take another look at the *psychologic* forces that are concerned in the attitude of antagonism toward fluoridation.

"There is a strange contrast in policy between smallpox vaccination and fluoridation. It is not long since the central Government gave up forcing every private citizen towards vaccination: now it rests with the individual to decide. At no stage were the local authorities granted discretion to decree that all the people in their area should be vaccinated. The choice for fluoridation has not been offered to the individual in the same terms. He has little option but to submit to the majority opinion in his locality, and, as no neighborhood is likely to express a unanimous opinion on anything, political strife is the inevitable result. The Government, always very sensitive

to local-authority reaction, have been careful to refer to the current British fluoridation as demonstrations rather than experiments, and to emphasize that these are being done by resolution of the locally elected representatives of the people living in those areas. Such a line carries some suspicion of pre-judgment and a definite disregard for minority views. When the medical importance of smallpox and dental caries are compared, it is even more curious to see the extent of the paradox.

"So, putting aside the scientific arguments, the legal uncertainties, and political expediency, the real problems about fluoridation seem to lie in the market-place. The common man has always impishly enjoyed the sight of experts in violent disagreement, when the technicalities of the issue are not clear to him he votes to maintain the status quo. He feels uneasy to seek the role of the experimental guineapig: he likes to cherish the myth that he has a free soul in a free man in a free country. He has gone to the stake and lands across the sea for that ideal before now. If he can choose cowpox lymph he can choose fluorine. He is uneasy at the choice of his public watersupply as the vehicle for making him feel better than he feels now. Water has some atavistic deep significance, a mystic quality, spa-like power. Civilizations have risen and fallen over water. Maybe those are some of the reasons why people are so touchy about it, why they resent its use for what they dislike as mass-medication, yet inconsistently clamor to have it purified by their waterworks. Inconsistent and irrational it may be, but we have to recognize that it is deeply rooted in personal purification rites, in contemplation of the immaculate, in Genesis itself. Perhaps it is not so much fluoridation as the insensitive handling of a taboo that has aroused such strong emotions. . . .

"So if we really want to tackle dental caries with fluorine or anything else, we might as well realize that blinding the public with science is a proved failure. It might work in unsophisticated countries, but it never works here. Fear, envy, and vanity offer much better chances. The responses to fear are unpredictable and might lead to even more premature dental clearance, apart from the ethics of such an approach. Envy seems to get results quite well. The poliomyelitis-immunization campaign benefited greatly from the hard-to-get-gambit, and by its advertisement as one of the more desirable features of transatlantic high standards of living. To a cinema-conditioned generation that appeal was irresistible. Waiting-lists piled up, rationing was introduced —and, after all, no one yet has shown that the vaccine is as effective to do its own job as fluorine is for dental caries. The point lies in comparing the effectiveness of popularizing preventive techniques. Envy wins hands down. Any sophisticated country contemplating fluoridation might well be advised to do so on such conventional political and commercial principles.

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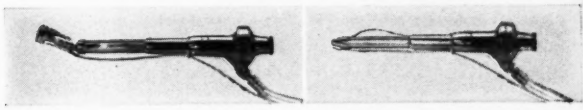

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"Vanity remains as the least despicable alternative to reason: it is a sin for which most people have a forgiving corner in their hearts. Fear and envy are unacceptable to our conscious thought, but in every reflecting surface we are daily reminded of our vanity. Proud though we may be of what our tailor or our dressmaker or our dentist has done for us, we cannot help wishing that the curves and the highlights were all our own. Could we not play more upon the public's vanity to show them that at least their teeth could stay all their own and be all that they could wish for? Reasoned argument has gone a long way to prove that fluorine can preserve the teeth, so let us see if we can offer it in some alternative way from putting it in the sacred drinking-water. After all, the public are quite accustomed to adding all sorts of drugs, chemicals, and panaceas into their tumblers and babies' bottles, so surely they could be trusted to put in their own dose of fluorides if they feel like it. It is a battle for men's minds before their enamel."

The Anesthesia of Alcohol

Now that the holiday season is over and most of us have returned to more abstemious ways (if not, in fact, resolved to go easier on the alcoholic intake) it might be a proper time to take a look at the four stages of drunkenness. The American Medical Association is concerned with the medicolegal implications of intoxication, so they have had an expert (Emil Bogen, M.D.) prepare an article on the behavioral changes under the anesthesia of alcohol.

Just a Little Drunk—"The diminution in inhibitions and social restraints may be at first manifested in slight departures from good taste and manners and lessening in self-control and consideration for others. Affective changes may lead to alterations in mood and disposition, with a feeling of euphoria and good fellowship, along with an increased confidence in one's mental and physical prowess which may lead to dangerous recklessness. At the same time attention, observation, deliberation and judgment, and self-criticism may be blunted and suggestibility and impulsiveness increased."

Medium Drunk—"Some persons become exalted, gay, and garrulous and others sentimental, affectionate, and confidential. Still others become boasting and boisterous or suspicious and bellicose, while some seem depressed and become sluggish, quiet, and sleepy without showing the more usual excitation. There may be emotional instability with sudden shifts from hilarious merriment to maudlin weeping, demonstrative affection to abusive pugnacity. Disorderliness, dirtiness, carelessness, and slovenliness may appear. Hearing and vision become less acute. Muscular movements are active, often unrestrained, and evidences of muscular incoordination and beginning clumsiness can be detected by careful observation or simple tests."

Very Drunk—"The mental obfuscation is intensified and incoordination becomes more prominent. The disposition and personality changes become greater; there may be flight of ideas and pressure of activity or sluggishness and loss of attention and response. Dizziness, double vision, or roaring in the ears may develop, and the senses of touch and pain as well as of sight and hearing may be blunted and reflex activity increased. The movements become incoordinated or uncontrolled, the subject may be unable to stand erect without swaying or falling. When his eyes are closed, his gait may become staggering, he cannot walk in a straight line or place his finger unhesitatingly on a desired point. Fumbling movements of the fingers and hands, with the familiar difficulty in inserting a key in a keyhole, or lighting a cigarette, or in buttoning a garment may be noted."

Passed Out—"As the intoxication deepens the subject reacts less and less well to the external environment, the early stages of apparent excitation disappear and the stage of apathy and general inertia develops. Ataxia and general incoordination become marked; the subject becomes unable to stand or even to sit up. Consciousness becomes impaired so that only strong stimulations elicit a response. A semistuporous or even comatose condition may ensue, with complete unconsciousness and paralysis and eventual fatality."

All of us who have done any drinking like to picture ourselves as charming and debonair, devastating in our wit, supermen in our strength and skills when in the first stage of alcoholic anesthesia. If we have sense enough to turn off the spigot at that stage we have a good chance to save face and often our faces. Unfortunately for most of us who take a drink or two our mathematics also become confused in the process: If one ounce of spirits makes us so euphoric, additional ounces will make us positively irresistible in our social graces and personality. But like any other anesthetic that of alcohol allows us to slip into the next stage or stages where our thought process, our behavior, our bodily functions are thrown out of balance and *we* have lost control.

Self-induced anesthesia in any form is dangerous to ourselves and everyone around us. —E. J. R.